Putting Teachers in Context: A Comparable Wage Analysis of Wyoming Teacher Salaries

Submitted to:

The Select Committee on School Finance Recalibration

Submitted by:

Dr. Lori L. Taylor
Texas A&M University

December 2010

Executive Summary

In order to attract and retain a high quality workforce, Wyoming school districts must pay teacher salaries that are competitive not only with non-teaching jobs in the local community, but also with teaching jobs in other states. This report finds that teacher salaries in Wyoming are highly competitive in both dimensions. .

The first part of the report compares teacher salaries with those of non-teachers, using data on individual teachers from the Wyoming Department of Education, funding model salaries, school district salary scales and an updated version of the National Center for Education Statistic's Comparable Wage Index. The analysis finds that teacher salaries in Wyoming are highly competitive with non-teacher salaries in Wyoming, and have been so for years. The average Wyoming teacher earns 97 percent of the average annual salary for comparable non-teachers, even though teachers typically work fewer weeks per year and are more likely to receive fringe benefits than non-teachers. Funding model starting salaries are higher than the 10-month starting salaries of comparable non-teachers in every school district and higher than the 12-month starting salaries for comparable non-teachers in half of the school districts in Wyoming. Based on the salary scales, most starting teachers in Wyoming earn more in ten months than comparable non-teachers earn in twelve.

The second part of the report compares teacher salaries in Wyoming with teacher salaries in other states using data from the National Center for Education Statistics' Schools and Staffing Survey. Again, the analysis finds that teacher salaries in Wyoming are highly competitive. Even without cost adjustments, salaries in Wyoming are well above average. Once regional variations in amenities and the cost of living are taken into account, Wyoming teacher salaries are among the highest in the nation, and starting salaries in Wyoming are by far the highest in the nation. Furthermore, Wyoming school districts are more likely to offer fringe benefits than are school districts in other states, and more likely to offer teachers relatively attractive working conditions such as small class sizes.

Introduction

Wages vary substantially from place to place and from occupation to occupation. In order to attract and retain a high quality workforce, Wyoming school districts must pay teacher salaries that are competitive not only with non-teaching jobs in the local community, but also with teaching jobs in other states. This report examines the competitiveness of Wyoming teacher salaries in both those dimensions.

When making such comparisons, it is important to recognize that factors outside of school district control can lead to substantial geographic differences in labor cost. All other things being equal, regions with a high cost of living are less attractive to teachers than regions with a low cost of living, so districts in high cost of living areas must pay higher wages if they want to attract highly qualified teachers. Similarly, regions that have a lot of natural beauty or other local amenities are more attractive to teachers than other regions, so districts without such amenities may need to offer a salary premium to attract teachers. Any place-to-place comparison of teacher salaries must take differences in amenities and the cost of living into account. I have done so using an updated version of the National Center for Education Statistic' Comparable Wage Index (CWI). Updating the CWI also provides estimates of the prevailing wage for college graduates in each Wyoming school district for 2009. See Appendix A for details on the update to the CWI.

Competitiveness with Non-teaching Jobs

There are three basic reasons why wages differ from one person to another. First, differences in worker characteristics will drive differences in wages. All other things being equal, workers with advanced degrees or increased work experience can expect to earn higher wages than other workers. Second, differences in job characteristics will drive differences in wages. Workers will demand a wage premium to accept jobs that are relatively unattractive or dangerous, but may be willing to work at a modest discount when the job is particularly fulfilling or the working conditions are unusually pleasant. Finally, locational characteristics will drive differences in wages. Workers in areas with a low cost of living or an abundance of amenities will be willing to accept a lower nominal wage than otherwise equal workers in a less attractive locale. To make fair comparisons across locations, one needs to isolate the effect of the location from the other two sources of wage variation.

A hedonic wage model uses regression analysis to decompose the observed variation in wages into that which is attributable to worker characteristics, that which is attributable to working conditions and that which is attributable to locational characteristics. Chambers (1998) used hedonic wage models to construct the price indices for certified personnel, non-certified

personnel and non-personnel inputs that comprise his geographic cost of education index.[1] Goldhaber (1999) used a hedonic wage model to estimate his general wage index. Taylor and Fowler (2006) used a hedonic wage model to estimate the National Center for Education Statistics' Comparable Wage Index. Taylor (2008a,b) used a hedonic wage model to compare teacher and non-teacher salaries.

I use the same technique to estimate the prevailing salary for teachers in Wyoming school districts. The hedonic salary model for Wyoming teachers describes each teacher's salary as a function of her personal characteristics, her job assignments, and the school district in which she works. I use this model to predict the average full-time-equivalent salary in each school district, holding constant the influence of demographic and job characteristics. Those predictions indicate the demographically and occupationally adjusted—or prevailing—salaries in the school district. Variations in the prevailing salaries reflect how much more or less each school district pays to recruit and retain comparable school personnel.

The Prevailing Salary for Teachers in Wyoming

Data for this part of the analysis were provided by the Wyoming Department of Education (WDE). Data on earnings, teacher characteristics and job assignments were drawn from the WDE602 fall data collection files for the ten school years from 2000-2001 through 2009-2010. All individuals who taught at least half time for a Wyoming public school district during the 10-year period are included in the analysis.

The teacher and job characteristics used to adjust teacher salaries are outlined in Table 1. Most are self explanatory, but a few require a bit of additional explanation. The teaching assignments are a series of indicators for whether or not the teacher was assigned to the specific subject matter. Any teacher could have one or more teaching assignments. Similarly, the non-teaching assignments are a series of indicators for whether or not the teacher was assigned to the specific non-teaching activity. Again, any teacher could have one or more non-teaching assignments. Because all of the teachers under analysis were, by definition, assigned to the teaching activity at least half time, there is no need for an indicator for teaching assignment. Instead, the analysis includes a measure of the percent time spent in teaching. The model also includes individual fixed effects to capture any unobserved differences in teacher qualifications across school districts.

[1] The price index for non-personnel inputs that Chambers used in the construction of the GCEI was based on geographic variations in the cost of hiring contractual personnel (which was estimated from the personnel indexes) and "some limited geographic variations in energy prices" (Chambers 1997).

Table 1: Explanatory Factors from the Hedonic Wage Model for Wyoming Teachers

Individual Characteristics	
Years of experience in the school district	Highest degree held (BA, MA, PhD)
Years of experience, total	Percent FTE in teaching
Years of experience unknown	Individual fixed effects
Teaching Assignments	
English	Social Science
Math	Health and P.E.
Foreign Language	Vocational Education
Bilingual/ESL	Fine Art
Science	Special Education
Elementary Education	
Non-Teaching Assignments	
Advisor/Sponsor	Head teacher
Assistant principal	Principal
Assistant coach	Support staff position
Coach	Certified Teacher Tutor Professional
Classified staff position	Other administrator

To estimate the prevailing teacher salary in each school district each year, I applied the hedonic salary model described in Table 1 to all available data on the earnings of Wyoming teachers from fall 2000 through fall 2009. Complete data were available for 13,441 individual teachers from 48 school districts.[2] Appendix Table B.1 presents the coefficient estimates and standard errors from the salary model. The dependent variable is the log of each individual's full-time-equivalent total salary, and the analysis also includes district-by-year fixed effects.

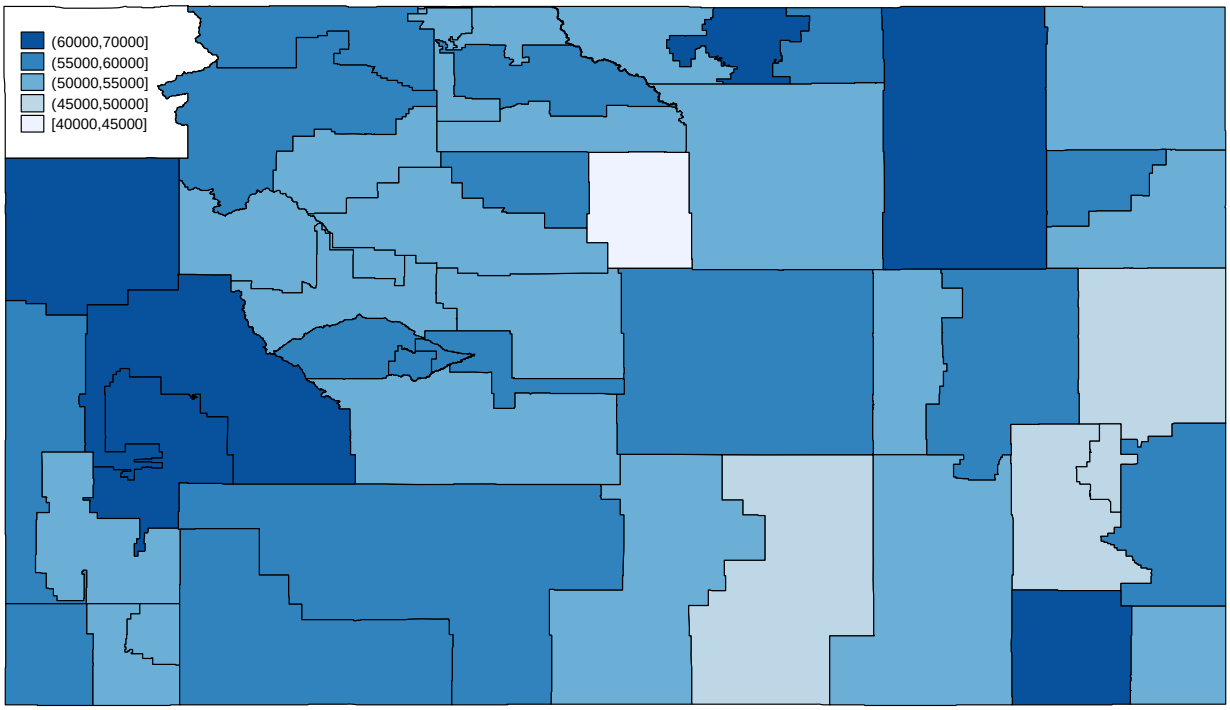
The hedonic model does a good job of capturing variations in teaching salaries. As expected, salaries increase with teaching experience and educational attainment. Teachers with administrative duties earn more than other teachers, all other things being equal. Head teachers earn 4.4 percent more, on average, than other teachers, while coaches on average earn 6.5 percent more. Elementary school teachers and bilingual/ESL teachers also earn significantly more than other teachers, all other things being equal. The model explains 96.3 percent of the variation in full-time-equivalent teaching salaries in the state of Wyoming over the last 10 years.

[2] Due to data quality concerns, teacher records with full-time-equivalent (FTE) total salaries greater than $120,000 or less than $12,000 were excluded from the analysis, as were individuals with a reported FTE greater than 1.1 or a FTE in teaching greater than 110 percent of the individual's total FTE. A teacher's FTE total salary is his or her total salary divided by his or her FTE.

Figure 1 illustrates the prevailing salary in each Wyoming school district in the fall of 2009. The prevailing salary in each district is the predicted salary for a teacher with state average characteristics.[3] Darker colors indicate higher prevailing salaries.

As the figure illustrates, even after adjustments for differences in teacher and job characteristics there are still substantial variations in teacher salaries within the state of Wyoming. Salaries were highest in Teton County School District #1, where the prevailing salary for a teacher with state average characteristics was greater than $64,000 per year. They were lowest in Washakie County School District #2, where the prevailing salary, once differences in teacher demographics were taken into account, was less than $45,000 per year.

Figure 1: The Prevailing Wage for Teachers, Fall 2009



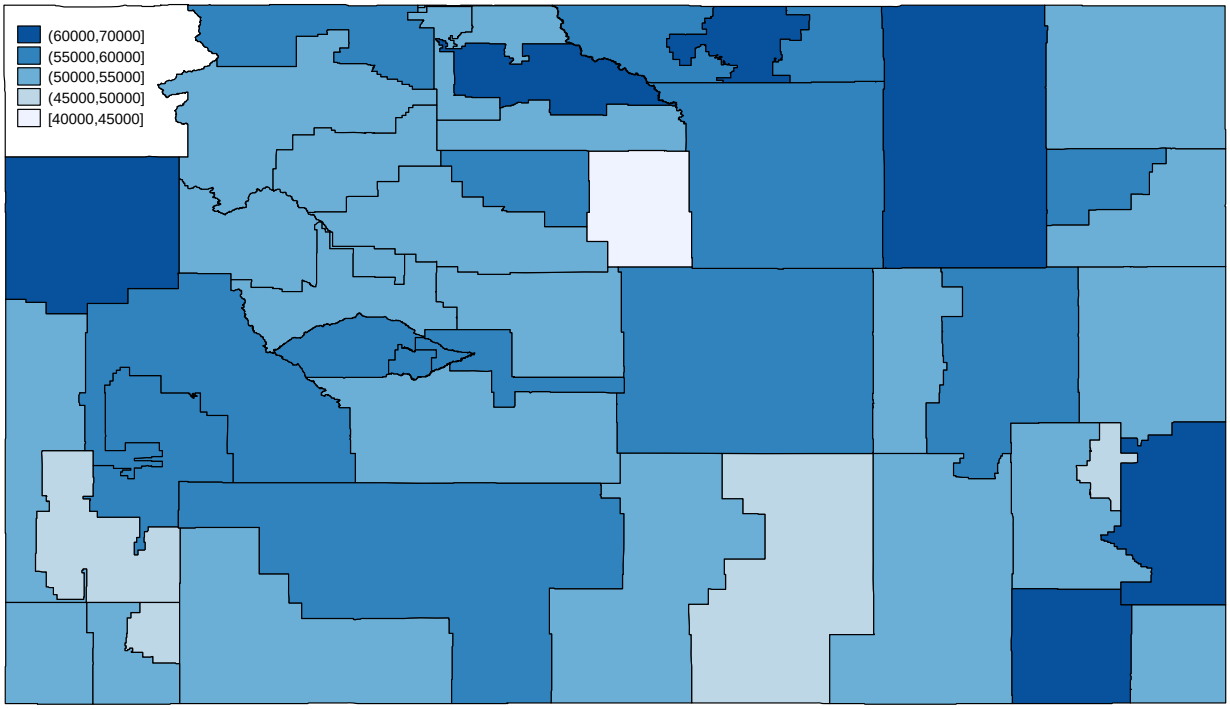
Source: Author's calculations using WDE602 files.

Figure 2 illustrates the prevailing salary for teachers, adjusted for regional variations in labor cost using the updated CWI. Again, darker colors indicate higher salaries.

As the figure shows, adjusting for regional differences in labor cost alters the pattern of teacher compensation somewhat. Cost adjustment lowers salary levels in western Wyoming, raises them in eastern Wyoming and the Cheyenne and Laramie metropolitan areas, and leaves them essentially unchanged in Central Wyoming (Carbon, Natrona and Fremont counties). Even after cost adjustments, salaries are still lowest in Washakie County School District #2. Cost-adjusted salaries are highest in Campbell County School District #1, Laramie County School District #1 and Sheridan County School District #2.

[3] Appendix table B.2 indicates the demographic and job characteristics of this standardized Wyoming teacher.

Figure 2: The Cost-Adjusted Prevailing Wage for Teachers, Fall 2009



Source: Author's calculations using WDE602 files and the updated CWi.

Table 2 presents the prevailing teaching salaries for each Wyoming county and compares them with the average non-educator salary implied by the updated CWI. The baseline national salary used to construct the NCES CWI was $47,836 (Taylor and Fowler 2006).[4] Multiplying the local CWI by $47,836 yields the comparable salary for college graduates in each Wyoming county.

Of course, the average college graduate works more weeks per year than does the average teacher in Wyoming.[5] Given a 10-month school year, a comparable baseline salary would have been $39,863 ($47,836*10/12). Assuming that the appropriate frame of reference is days worked, and that non-educators typically work 250 days a year (5 days a week * 50 weeks) while Wyoming teachers typically work 185 contract days, the comparable baseline salary would have been $35,399 ($47,836*185/250). In order to make salaries outside of education truly comparable to teaching salaries, one must adjust the comparable salaries downward. However, the appropriate adjustment is not obvious. The third column of Table 2 presents the comparable wages, assuming a 10-month school year, but other adjustments are equally plausible.

[4] This was the average annual salary and wages for all Census respondents with college degrees in 1999. Appendix table B.3 lists the 460 occupations held by those individuals, and each occupation's weight in the construction of the average wage. Alternatively, Allegretto, Corcoran, and Mishel (2004) identified 16 occupations in the Current Population Survey that were particularly comparable to teaching on the basis of an evaluation of the skills required to do the job. If only these industries were used to construct it, the baseline comparable salary would be $45,100 per year.

[5] On average, Census respondents with a college degree reported working 51 weeks per year.

Table 2: Prevailing Teacher Salaries by County, 2009-10

County	Prevailing Teacher Salary	12-Month Comparable Wage	10-Month Comparable Wage
Albany County	$52,187	$57,209	$47,674
Big Horn County	$52,807	$56,568	$47,140
Campbell County	$62,836	$56,568	$47,140
Carbon County	$51,134	$59,222	$49,352
Converse County	$54,203	$56,568	$47,140
Crook County	$51,938	$56,568	$47,140
Fremont County	$55,431	$59,222	$49,352
Goshen County	$59,918	$56,568	$47,140
Hot Springs County	$50,382	$56,568	$47,140
Johnson County	$54,824	$56,568	$47,140
Laramie County	$60,685	$57,209	$47,674
Lincoln County	$57,347	$63,076	$52,564
Natrona County	$57,202	$59,222	$49,352
Niobrara County	$47,836	$56,568	$47,140
Park County	$58,705	$63,076	$52,564
Platte County	$47,880	$56,568	$47,140
Sheridan County	$59,292	$56,568	$47,140
Sublette County	$60,945	$63,076	$52,564
Sweetwater County	$58,165	$63,076	$52,564
Teton County	$64,891	$63,076	$52,564
Uinta County	$54,897	$63,076	$52,564
Washakie County	$54,341	$56,568	$47,140
Weston County	$53,162	$56,568	$47,140
State Average	$57,424	$59,149	$49,291

Source: Author's calculations.

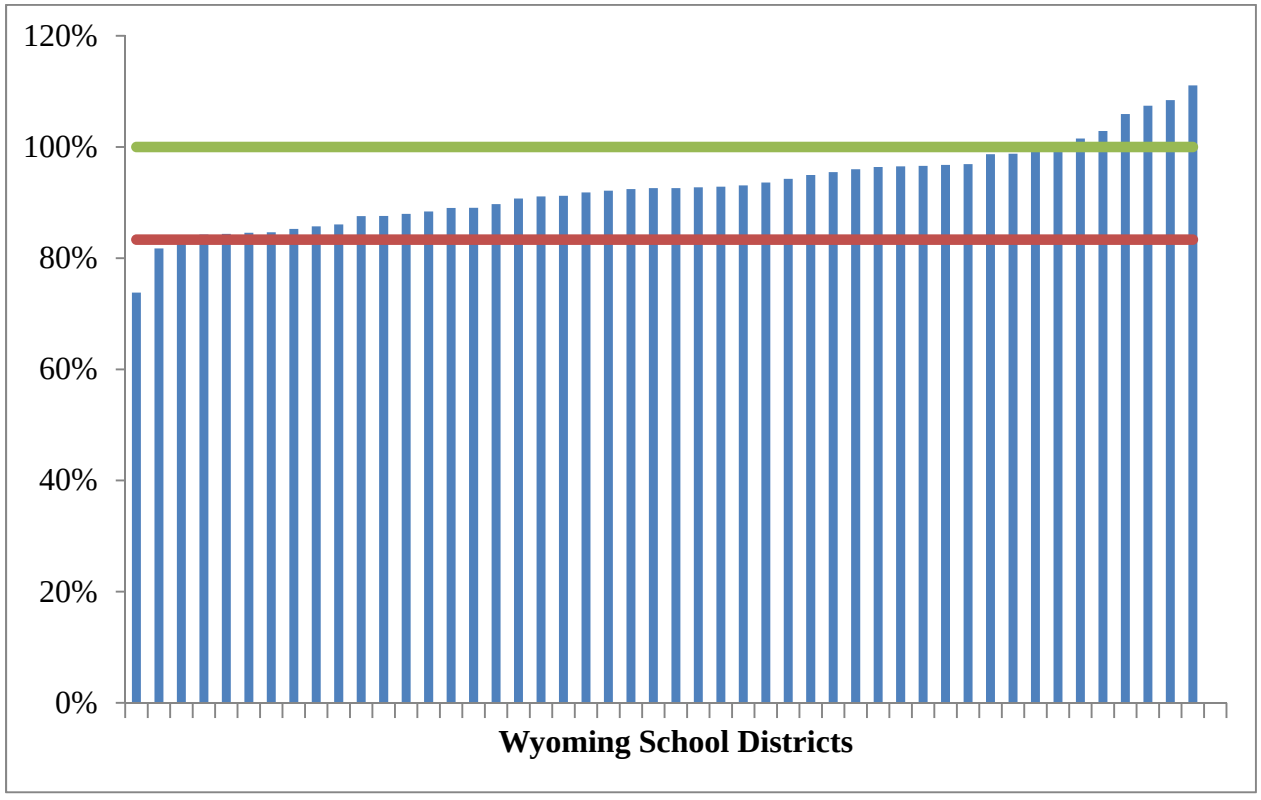
As the table illustrates, there is considerable variation in prevailing teacher salaries across Wyoming counties. On average, prevailing salaries in Platte and Niobrara Counties are the lowest in the state, while prevailing salaries in Campbell and Teton counties are the highest in the state. Prevailing teacher salaries are higher than the 10-month comparable salary for non-teachers in all Wyoming counties, and higher than the 12-month comparable salary for non-teachers in Teton, Sheridan, Goshen, Laramie, and Campbell counties. In Campbell county, the models predict that the average Wyoming teacher would earn $62,836 per year while the average college graduate would earn $56,568, even though the average teacher works considerably fewer weeks each year.

The relative teaching salary is one measure of the competitiveness of teacher salaries. It is defined as the ratio of teaching salaries to 12-month salaries for comparable non-teachers. A relative salary greater than 100 percent indicates that teachers are paid more than the annual salary of comparable non-teachers, while a relative salary less than 100 percent indicates that

teachers are paid less than the annual salary of comparable non-teachers. A relative salary greater than 83.3 percent (10/12) indicates that teachers are paid more than the 10-month salary of comparable non-teachers.

Figure 3 illustrates the relative teaching salary in each Wyoming school district. Each of the 48 vertical bars represents a single school district. The lower horizontal line indicates the 10-month comparable salary; the higher horizontal line indicates the 12-month comparable salary. As the figure illustrates, all but two Wyoming school districts--Washakie County School District #2 and Platte County School District #2—have prevailing teacher salaries that are equal to or greater than the 10-month salaries of comparable non-teachers. Six Wyoming districts—Big Horn County School District #3, Teton County School District #1, Goshen County School District #1, Laramie County School District #1, Sheridan County School District #2, and Campbell County School District #1—have prevailing teaching salaries that are more than 100 percent of the 12-month salaries for comparable non-teachers

Figure 3: Relative Teaching Salaries for Wyoming School Districts, 2009-10



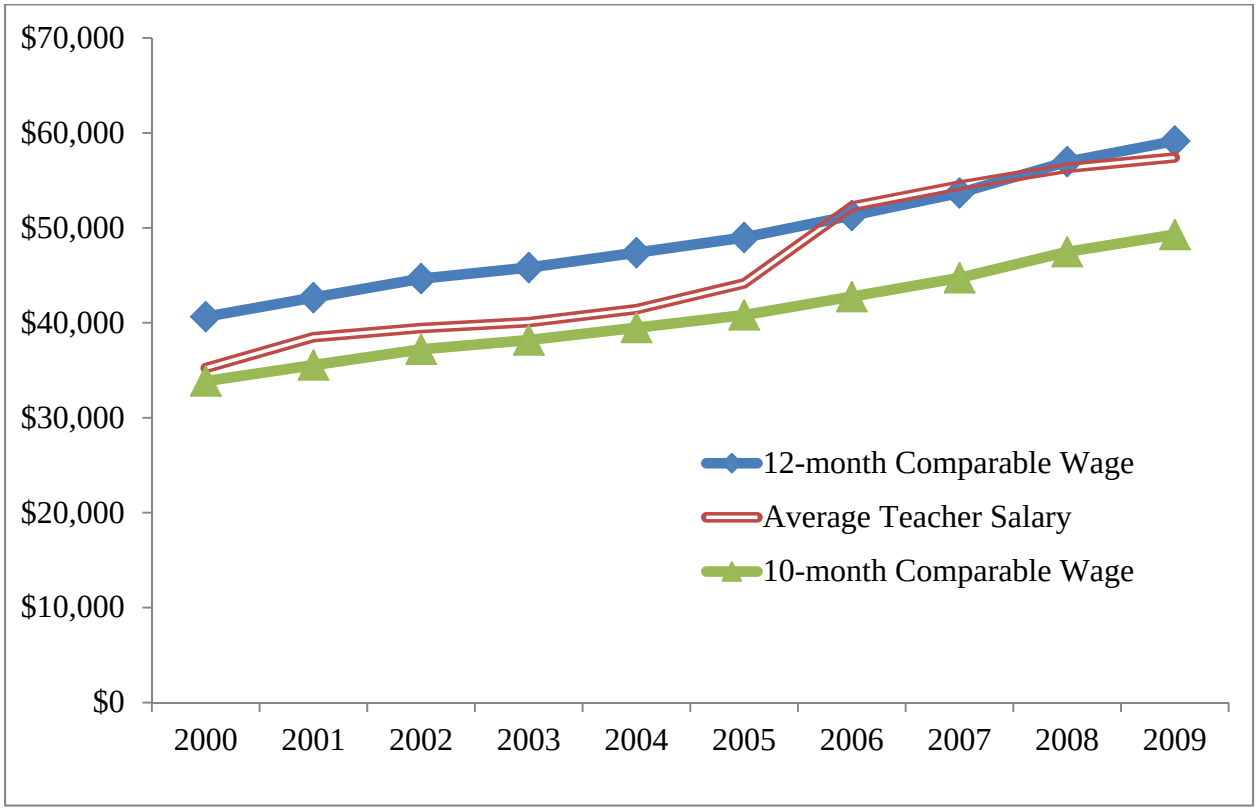
Source: Author's calculations.

The last row in Table 2 presents the statewide averages for the prevailing teacher salaries and the comparable wages. As the row illustrates, the average teacher in Wyoming earned $57,424 in 2009-2010, while the average non-teacher in Wyoming earned $59,149. In other words, the average teacher earned more than 97 percent of the annual salary for a comparable non-teacher, without any adjustments for differences in the number of days worked or the value of fringe

benefits. There are no data on the benefits received by non-teachers in Wyoming, but all Wyoming teachers receive health insurance and retirement benefits, so it is unlikely that teachers receive fewer fringe benefits than comparable non-teachers. If the length of the school year and the value of fringe benefits are taken into account, then teaching positions in Wyoming become even more competitive with non-teaching positions.

Figure 4 illustrates the changes over time in the comparable wages and the state average prevailing teacher salary. As the figure illustrates, average salaries were similar to the 10-month comparable wage during the early part of the decade, but rose sharply between fall 2005 and fall 2006. Since fall 2006, the prevailing teacher salary in Wyoming has been very similar to the 12-month comparable wage. Thus, the analysis suggests that average teacher salaries in Wyoming have been competitive with those of non-teachers for the last decade, and have been highly competitive for at least the last four years.

Figure 4: Comparing Salary Levels Over Time.



Source: Author's calculations.

Relative Starting Salaries

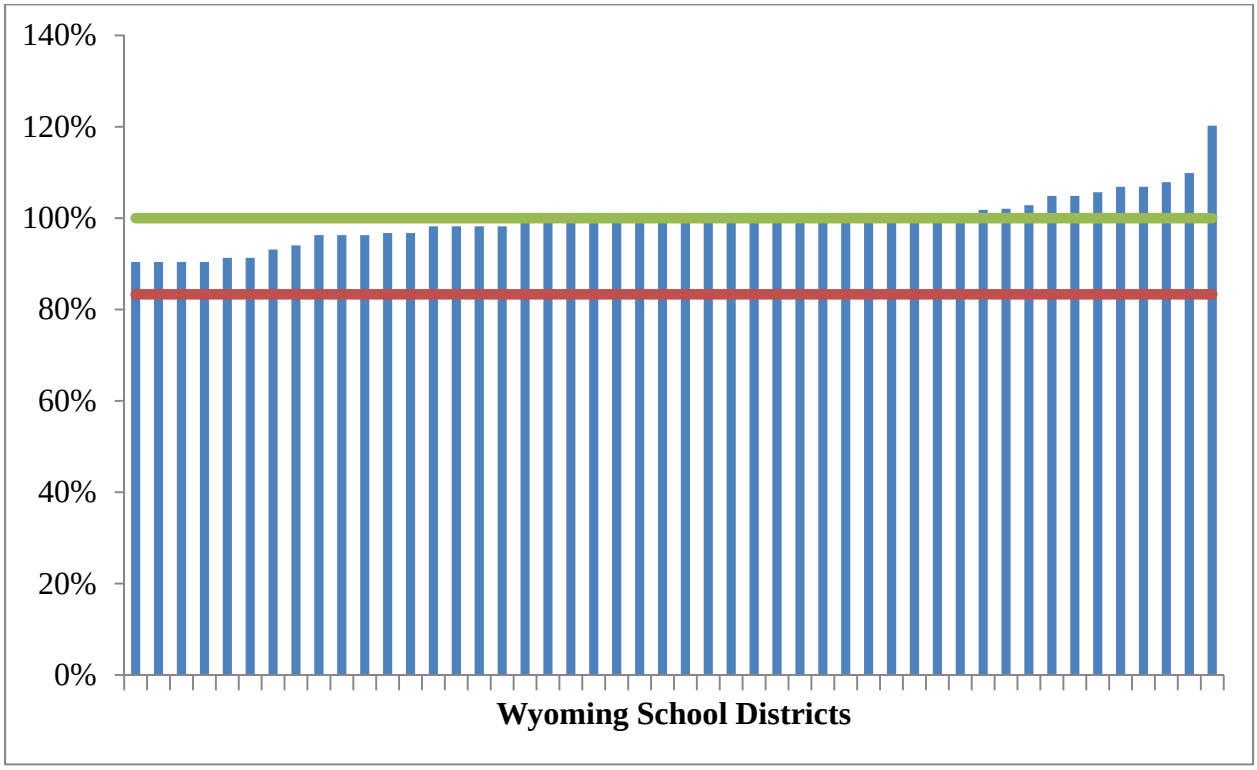
One concern that might arise from a comparison of prevailing salaries is that the average teacher may not be sufficiently similar to the average non-teacher with respect to their demographic characteristics and work experiences. To ensure an apples-to-apples comparison, this analysis now turns to focus on relative starting salaries.

I use two measures of the starting salaries for Wyoming teachers—the funding model salaries for a teacher with a bachelor's degree and zero years of experience, and the first step on the teacher salary scale for each Wyoming school district. For comparison, I used the NCES comparable wage model to predict the baseline salary for a 23-year-old with a bachelor's degree. This baseline salary was $31,348 per year in 1999. As before, multiplying this baseline by the updated CWI yields the comparable starting salary for non-teachers. In 2009, the average first step on the salary scale was $41,889, the funding model salary for a beginning teacher was $38,544 and the comparable 12-month salary for a non-teacher in Wyoming was $38,761. Thus, the evidence suggests that starting salaries for teachers in fall 2009 were highly competitive with starting salaries for non-teachers in Wyoming.

Figure 5 illustrates the relative starting salaries for Wyoming school districts based on the funding model allocations. As with the analysis of average salaries, the relative starting salary is the ratio of the annual teaching salary to the 12-month salary for comparable non-teachers. Again, each vertical bar represents one of the 48 Wyoming school districts, the higher horizontal line indicates 100 percent the 12-month comparable salary and the lower horizontal line indicates 83 percent of the 12-month comparable salary, which would be the 10-month comparable salary.

As the figure illustrates, the funding model salaries for starting teachers are very competitive with the salaries of comparable non-teachers. Funding model starting salaries are more than 90 percent of the starting salaries for comparable non-teachers in all Wyoming school districts, and

Figure 5; Relative Starting Salaries Using Funding Model Salaries, 2009-10.

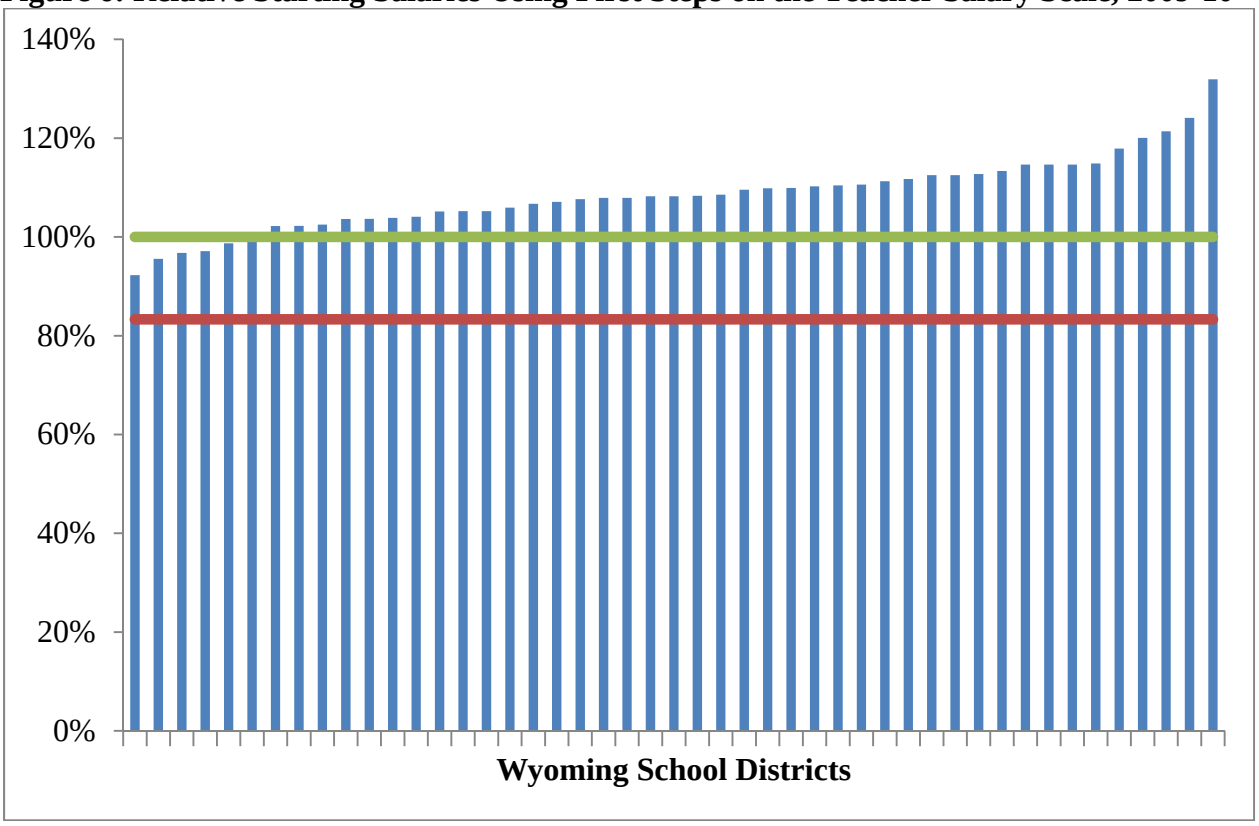


Source: Author's calculations.

equal to or greater than 100 percent of the starting salaries for comparable non-teachers in half of the Wyoming districts. Funding model starting salaries in Teton County School District #1 are more than 120 percent of the 12-month salaries for comparable non-teachers.

Figure 6 presents the same information in Figure 5, but uses the first steps on the salary scales rather than the funding model salaries. As the figure illustrates, the first steps on the salary scale are generally higher than the funding model salaries for starting teachers, making the relative starting salaries also higher. Only six school districts—Uinta County School District #6, Carbon County School District #2, Lincoln County School District #1, Park County School District #16, Washakie County School District #2 and Sublette County School District #9—have first steps on the salary scale that are lower than the 12-month starting salary for comparable non-teachers.

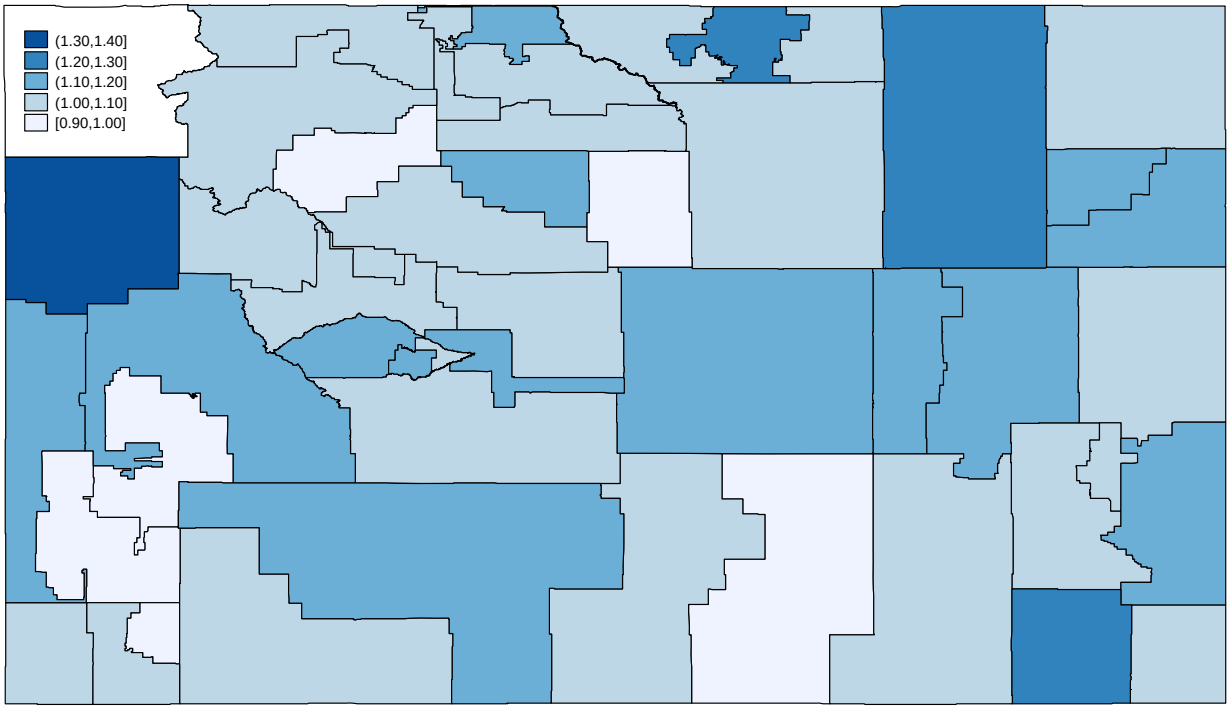
Figure 6: Relative Starting Salaries Using First Steps on the Teacher Salary Scale, 2009-10



Source: Author's calculations.

Figure 7 maps the relative starting salaries for 2009-10 based on the first steps on the salary scales. As the figure illustrates, there is no obvious geographic pattern to the relative starting salaries. The highest relative starting salaries and the lowest starting salaries were both found in the western third of the state. Relative starting salaries are unusually high in Teton County School District #1, Campbell County School District #1, Laramie County School District #1 and Sheridan County School District #2, but not in the surrounding school districts. The first step on the salary scale in Teton County School District #1 is more than 130 percent of the 12-month

Figure 7: The Geography of Relative Starting Salaries Using First Steps on the Teacher Salary Scale, 2009-10



Source: Author's calculations.

salary for comparable non-teachers. The first step on the salary scale in Campbell County School District #1 is more than 120 percent of the 12-month comparable wage.

Summarizing the Evidence

All told, the evidence is compelling. Teacher salaries in Wyoming are highly competitive with non-teacher salaries in Wyoming, and have been for some time. Starting salaries for teachers exceed the 12-month salaries of comparable non-teachers in most Wyoming school districts, and the average salary for teachers in Wyoming is 97 percent of the average 12-month salary for comparable non-teachers. There are two districts where average teacher salaries are lower than the 10-month salaries of comparable non-teachers, but those districts employ less than 0.6 percent of Wyoming teachers. For the vast majority of Wyoming teachers, the salaries they receive from teaching meet or exceed the salaries received by comparable non-teachers in their community.

Comparisons Across States

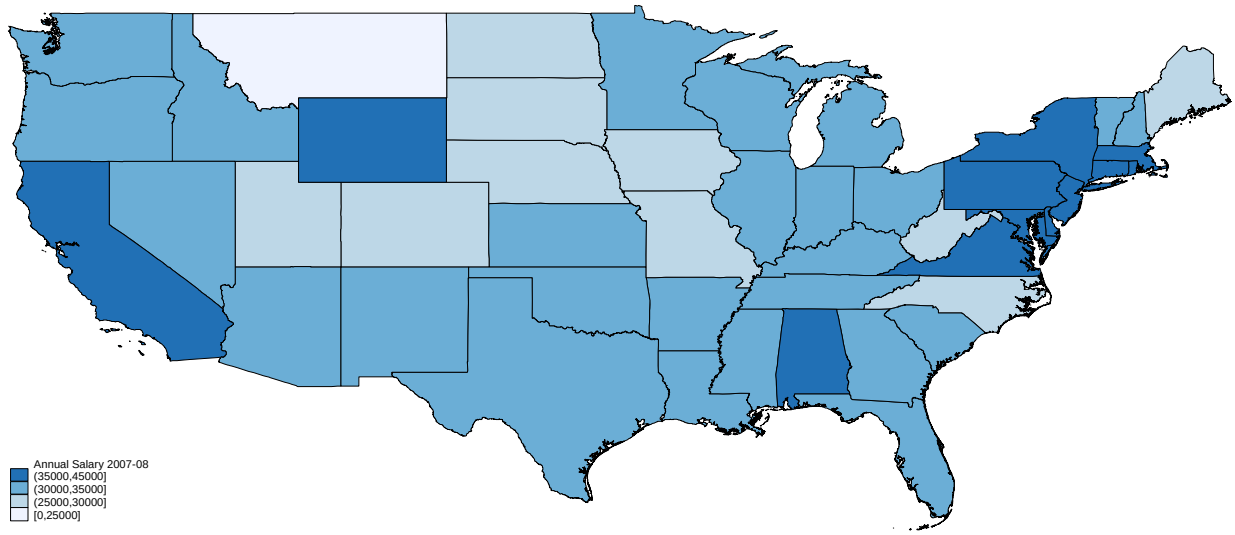
The Schools and Staffing Survey (SASS) is conducted periodically by the National Center for Education Statistics. Public school districts, principals and teachers throughout the nation are surveyed about a variety of education topics, including school and teacher characteristics, teacher

salaries and benefits, and teacher workloads.[6] Those survey responses are the best available evidence for determining whether or not teacher salaries in Wyoming are competitive with those in other states and form the basis for the analysis in this section of the report. The most recent SASS collected data about the 2007-08 school year, so this part of the analysis analyzes teacher compensation and working conditions during the 2007-08 school year.

Comparing Teacher Salaries

Figure 8 illustrates the average annual starting salary for a teacher with a bachelor's degree, by state. As the figure illustrates, starting salaries in Wyoming are among the highest in the nation. According to the SASS, in 2007-08 the average starting salary for teachers in Wyoming was $38,500, or $4,900 per year above the national average of $33,600. Only six states (Connecticut, California, New York, Maryland, Hawaii, and New Jersey) had starting teacher salaries higher than those in Wyoming during 2007-08.

Figure 8: Annual Starting Salaries for Teachers with a Bachelor's Degree, 2007-08

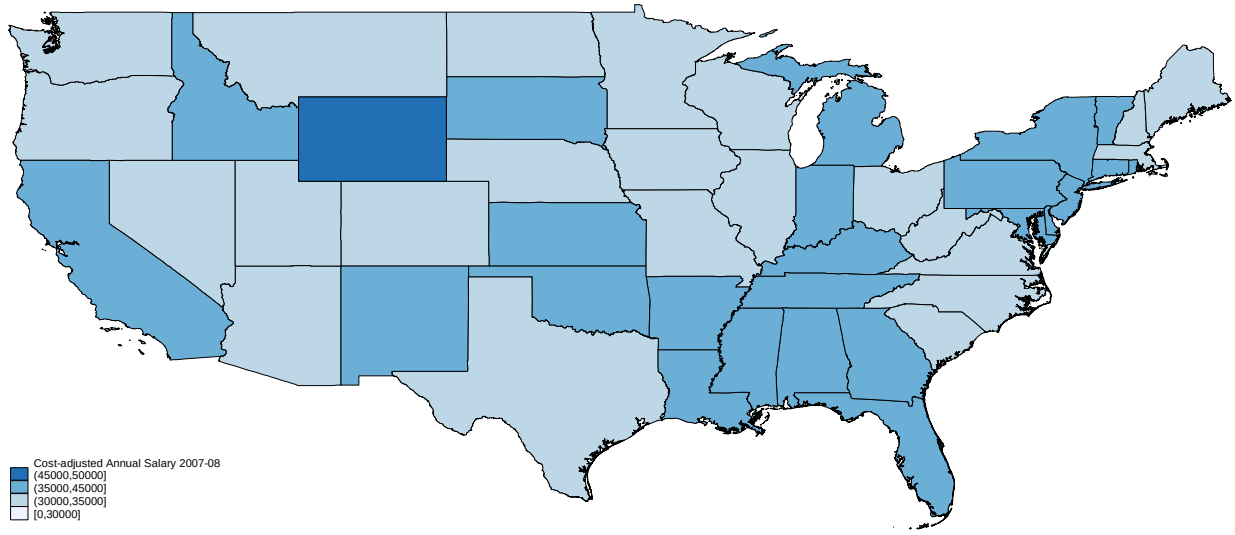


Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School District Data File," 2007-08.

Furthermore, all of the states with starting salaries higher than in Wyoming are high cost-of-living states. As figure 9 illustrates, once you adjust for regional variations in the wage level using the updated CWI, it becomes clear that starting salaries are higher in Wyoming than in any other state. After cost-adjustments, starting salaries are at least 14 percent higher in Wyoming than in any other state except Hawaii.

[6] Private schools and Bureau of Indian Affairs schools are surveyed separately. This analysis focuses only on the public school responses. Department of Defense schools are not included in the SASS sample, nor are schools that serve only kindergarten and pre-kindergarten students. For more on the 2007-08 SASS, visit http://nces.ed.gov/surveys/sass

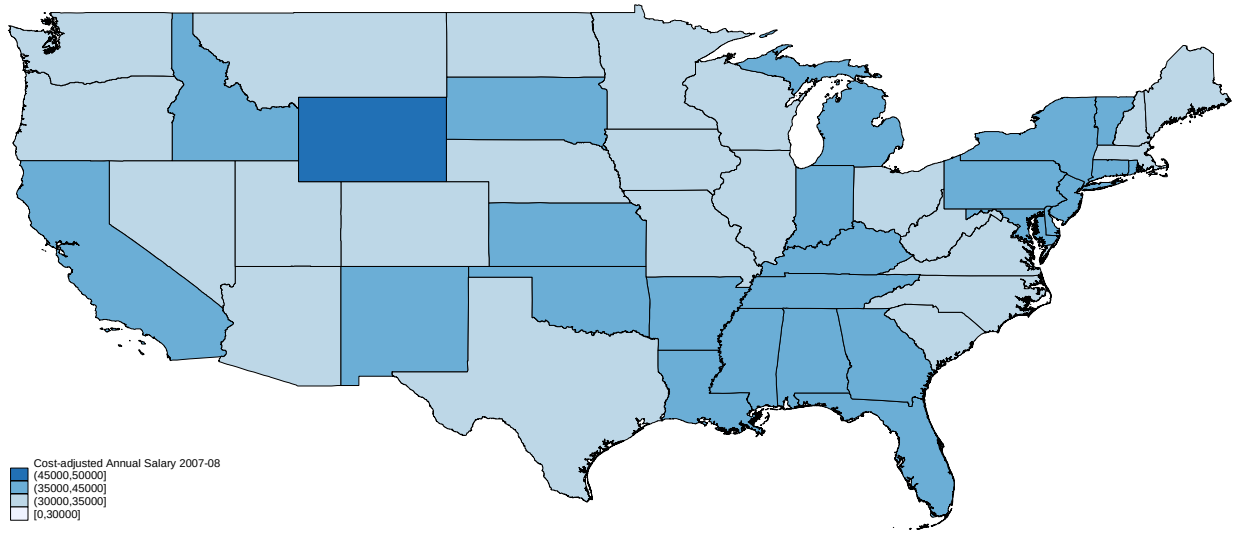
Figure 9: Cost-Adjusted Starting Salaries for Teachers with a Bachelor's Degree, 2007-08



Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School District Data File," 2007-08 and author's calculations using the updated CWI

Cost-adjusted salaries for experienced teachers are also high in Wyoming. Figure 10 illustrates the cost-adjusted annual salaries for teachers with a Master's degree and 10 years of teaching experience. The cost-adjusted annual salary for an experienced teacher with a Master's degree in Wyoming was 21 percent higher than the national average of $49,900. Only two states—Alaska and Rhode Island—had higher cost-adjusted salaries for experienced teachers in 2007-08.

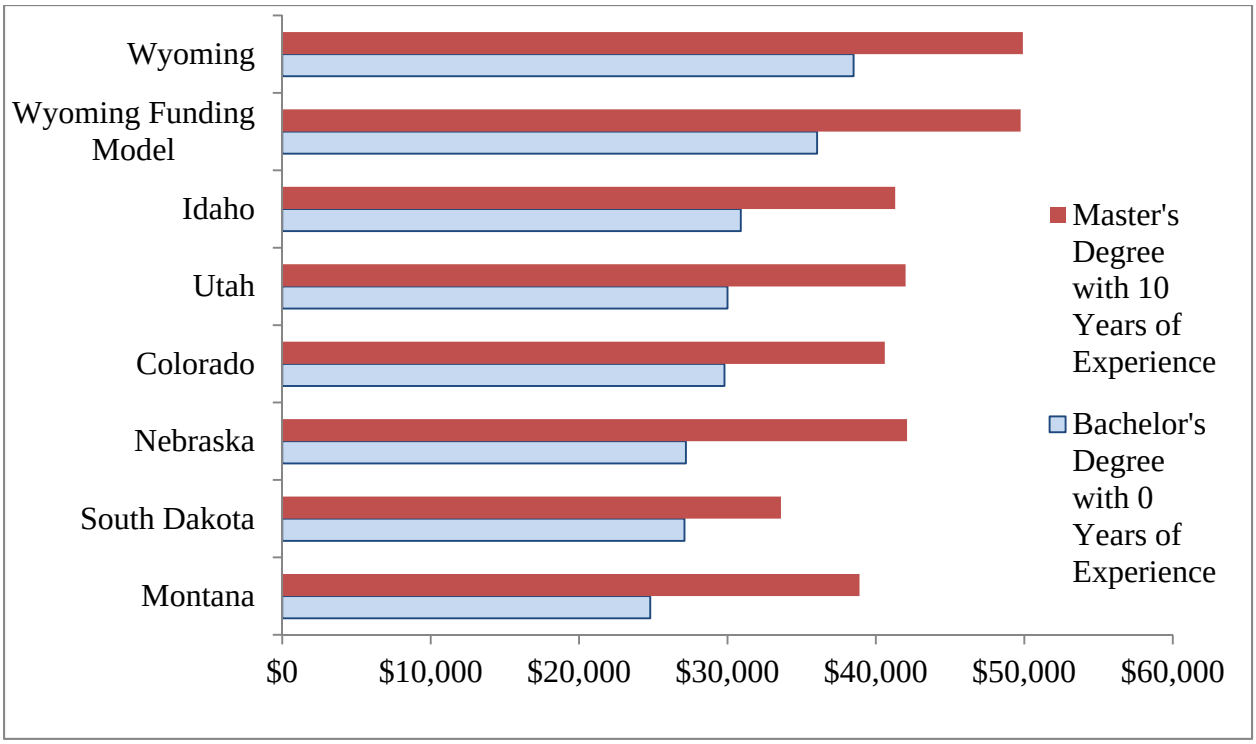
Figure 10: Cost-Adjusted Starting Salaries for Teachers with a Master's Degree and 10 years Experience, 2007-08



Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School District Data File," 2007-08 and author's calculations using the updated CWI

Figure 11 compares the average teacher salaries in Wyoming with the average teacher salaries in the surrounding states and with the average salaries used in the Wyoming funding model for the 2007-08 school year. None of the salaries have been cost-adjusted. As the figure illustrates, average starting salaries in Wyoming were slightly higher than those used in the funding model while average salaries for teachers with a Master's degree and 10 years of experience were nearly identical to those used in the funding model. Strikingly, both the average salaries in Wyoming and the average salaries used in the Wyoming funding model were higher than the average salaries in every surrounding state. Funding model starting salaries were more than $5,000 per year higher than average starting salaries in Idaho, and more than $11,000 per year higher than average starting salaries in Montana. Funding model salaries for teachers with a Master's degree and 10 years of experience were at least $7,600 higher than the average salaries for comparable teachers in the surrounding states, and more than $16,000 per year higher than the average salaries for comparable teachers in South Dakota.

Figure 11: Average Salaries in Wyoming and Surrounding States, 2007-08



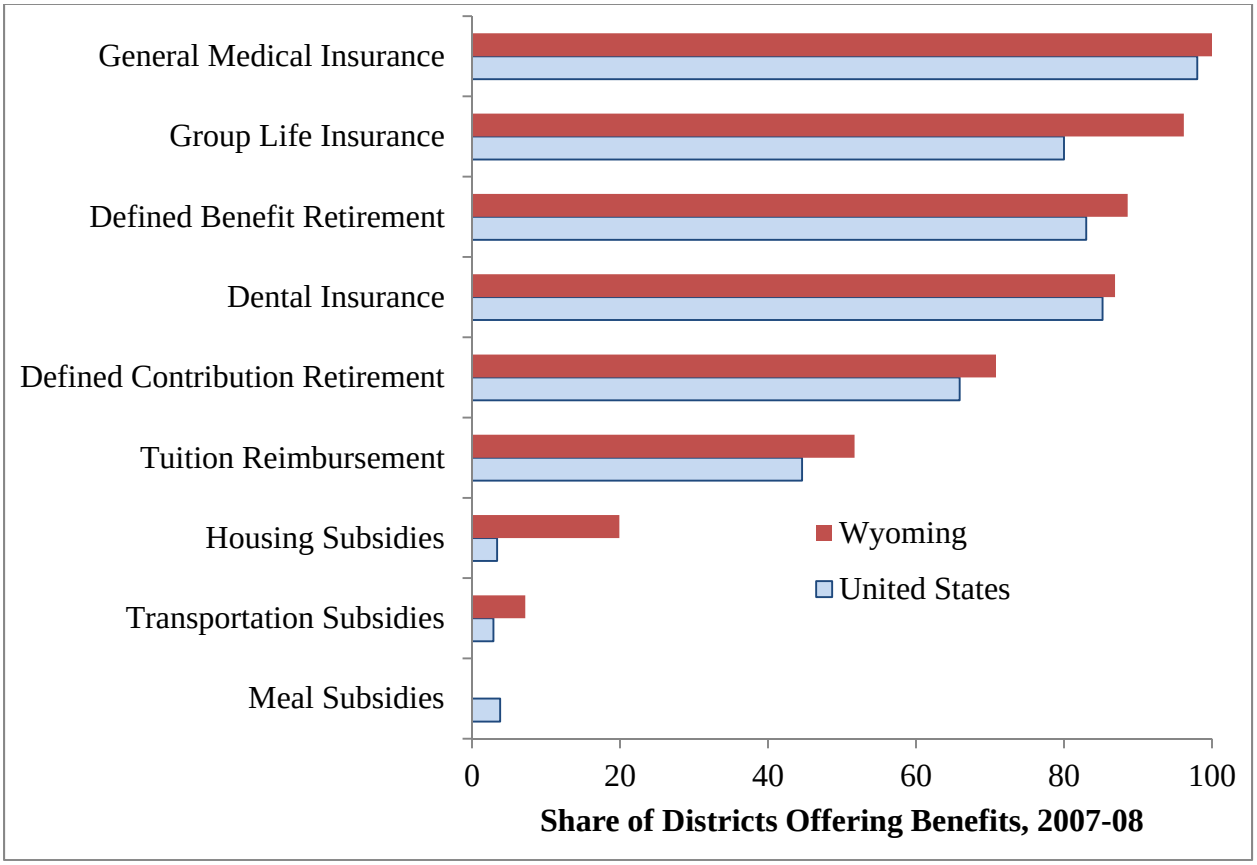
Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School District Data File," 2007-08 and Wyoming Department of Education.

Comparing Teacher Benefits

Not only are teacher salaries above the national average in Wyoming, but so are teacher benefits. Figure 12 compares the share of school districts offering various types of benefits in Wyoming to the national average. As the figure illustrates, school districts in Wyoming are more likely than the national average to offer general medical insurance coverage, group life insurance, retirement

benefits, tuition reimbursements and housing subsidies. The only category of benefits reported in the SASS that Wyoming districts are less likely to provide are meal subsidies.

Figure 12: Share of Public School Districts Offering Benefits to Teachers, by Type of Benefits, 2007-08

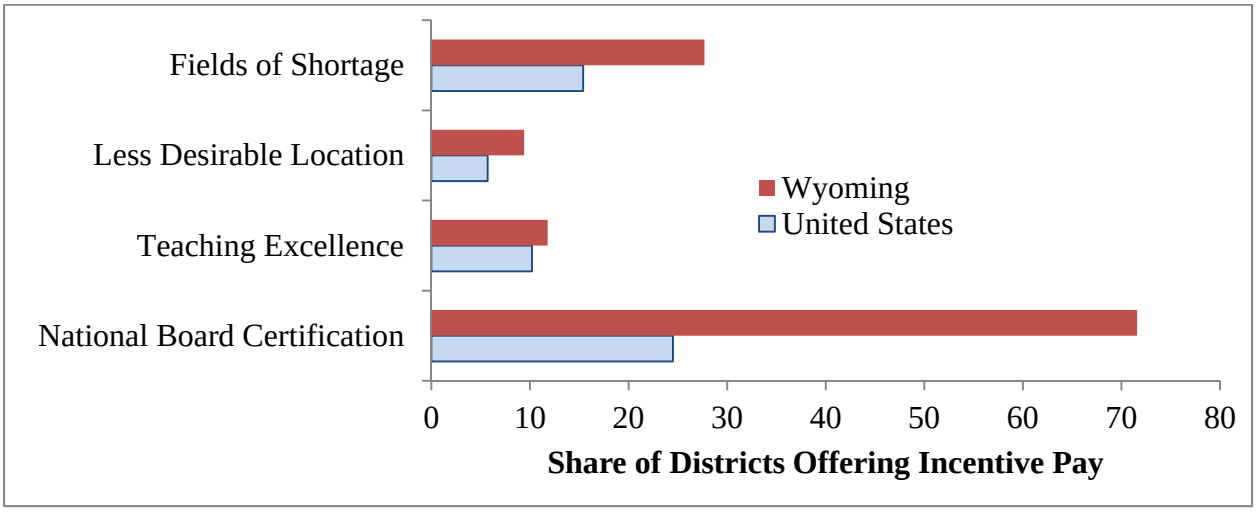


Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School District Data File," 2007-08

Comparing Incentive Pay

School districts in Wyoming are also more likely to offer incentive pay to teachers. As figure 13 illustrates, school districts in Wyoming are more likely than the national average to offer incentive pay for teaching in a shortage field, for teaching in a less desirable location or for teaching excellence. Wyoming school districts were much more likely to offer incentives to teachers who are National Board Certified. Wyoming school districts are nearly three times as likely as the national average to reward National Board Certification.

Figure 13: The Share of Public School Districts Offering Teacher Incentive Pay by Type of Incentive, 2007-08

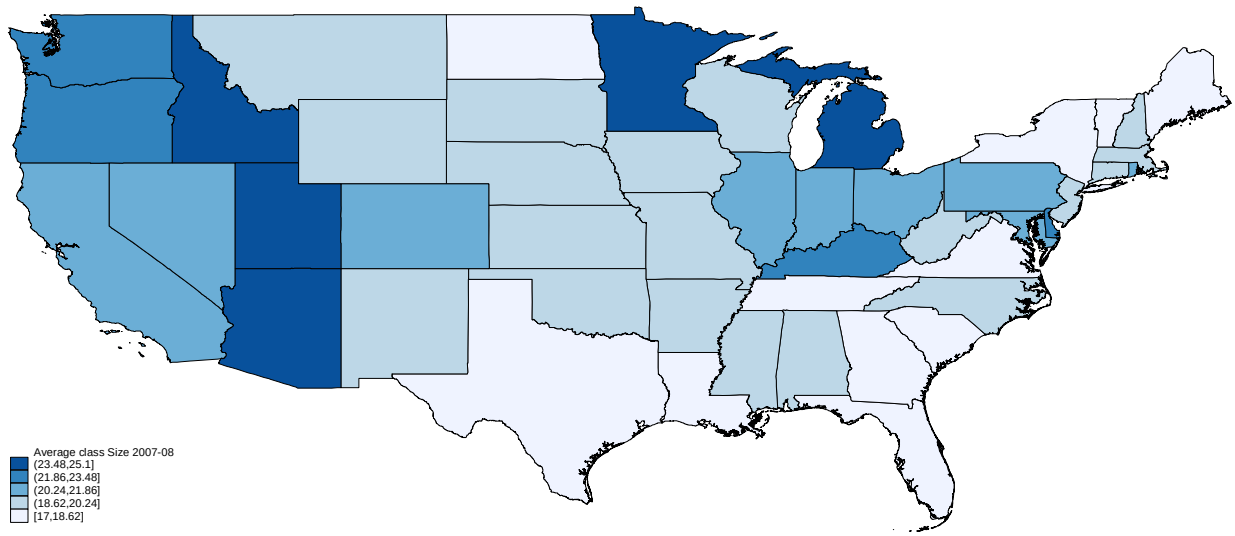


Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School District Data File," 2007-08

Comparing Working Condition

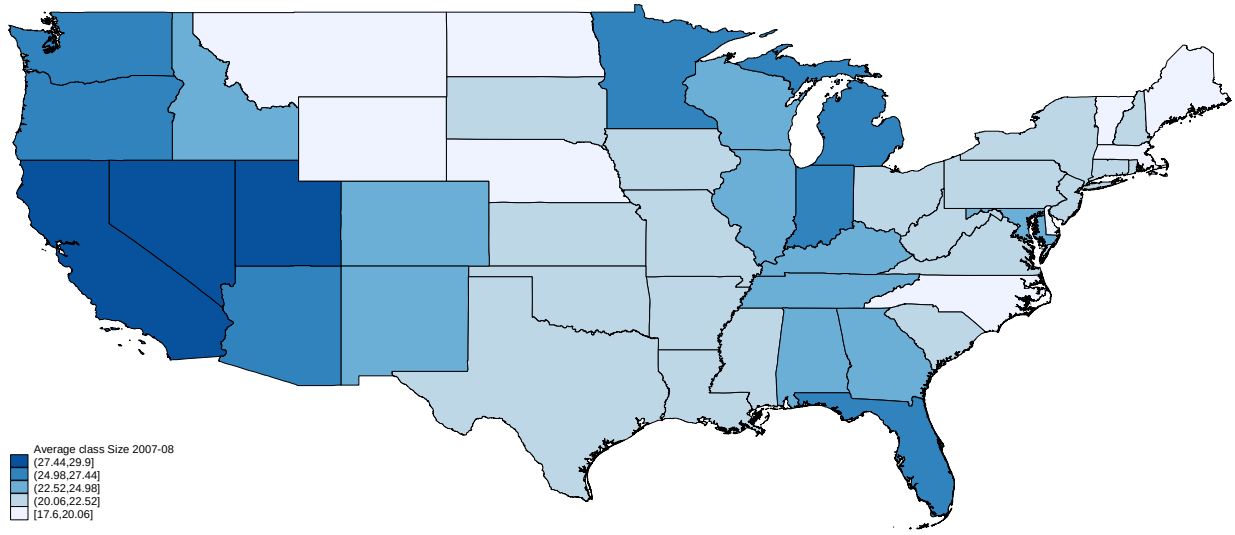
Working conditions in Wyoming also tend to be favorable. One of the most important aspects of working conditions is class size, and average class sizes in Wyoming are lower than the national average. Figure 14 illustrates the average class size for elementary self-contained classrooms in 2007-08, while Figure 15 illustrates the average class size for secondary departmentalized classrooms. As the figures illustrate, class sizes in Wyoming are below the national average, and well below those in many surrounding states. In 2007-08, Wyoming ranked 13th in the nation with respect to elementary class size, and 4th in the nation with respect to secondary class size.

Figure 14: Average Class Size for Elementary Self-Contained Classrooms, 2007-08



Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School District Data File," 2007-08

Figure 15: Average Class Size for Secondary Departmentalized Classrooms, 2007-08



Source: U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey (SASS), "Public School District Data File," 2007-08

Summarizing the Evidence

All told, the evidence from the SASS suggests that teacher salaries in Wyoming are highly competitive with teacher salaries in other states. Even without cost adjustments, salaries in Wyoming are above average. Once regional variations in amenities and the cost of living are taken into account, Wyoming teacher salaries are among the highest in the nation, and starting salaries in Wyoming are by far the highest in the nation. Furthermore, Wyoming school districts are more likely to offer fringe benefits than are school districts in other states, and more likely to offer teachers relatively attractive working conditions such as small class sizes.

Conclusions

The evidence presented in this report strongly suggests that teacher salaries in Wyoming are highly competitive with non-teaching salaries in Wyoming and with teaching salaries in other states.

- Teacher salaries in Wyoming are among the highest in the country.
- Teacher benefits are more extensive in Wyoming.
- Working conditions are more favorable in Wyoming.
- Average teacher salaries in Wyoming have been competitive with those of non-teachers for the last decade, and have been highly competitive for at least the last four years.
- On average, Wyoming teachers earn 97 percent of the average annual salary for comparable non-teachers, even though teachers work fewer weeks each year and are more likely to receive fringe benefits than non-teachers.
- Most starting teachers earn more in ten months than comparable non-teachers earn in twelve.

- Funding model starting salaries are higher than 10-month starting salaries for comparable non-teachers in all Wyoming school districts, and equal to or higher than 12-month starting salaries for comparable non-teachers in half of the Wyoming districts.

Although teacher salaries are currently highly competitive, there is no guarantee that they will remain that way. Over time, inflationary pressures will lead to increases in the salaries of non-teachers inside Wyoming and teachers outside Wyoming. Such increases could erode the relative position of Wyoming school districts.

There are a number of signs that could signal a worrisome decline in the competitiveness of Wyoming teacher salaries.

- First, teacher salaries could fall below the 10-month salaries of comparable non-teachers. Declines in teacher salaries relative to those of non-teachers would indicate that teaching is becoming a less attractive occupation for college graduates and could lead to a decline in the qualifications of new teachers or an increase in the number of highly skilled individuals leaving the teaching profession.
- Second, unexpected increases in turnover or absenteeism could indicate that teaching is becoming a less attractive occupation. Turnover among teachers nearing retirement age is to be expected and need not signal anything about the relative attractiveness of the teaching profession in Wyoming. However, increases in turnover among teachers who are not eligible for retirement and increases in the number of teachers leaving the state or leaving the teaching profession can be strong indicators that teacher compensation in Wyoming is no longer competitive.
- Third, persistent shortages in teaching specialties or specific communities could signal that teacher compensation is not competitive in those fields or locations. Other occupations and other states may pay a premium for specific teacher skills like math and science ability. If Wyoming school districts start to experience persistent difficulties hiring, then that would suggest that teacher salaries are not competitive in those fields and locations.
- Finally, unexplained declines in the number of job applicants or the qualifications of those applicants could signal that teaching jobs in Wyoming are no longer competitive. The number of individuals applying for a position is one indicator of the attractiveness of that position. If fewer qualified individuals are applying and there are no other obvious explanations for the decline in the number of applicants, then there is evidence that teacher salaries in Wyoming are no longer competitive.

At the present time, teacher salaries in Wyoming are high not only with respect to teacher salaries in other states, but also with respect to non-teacher salaries in Wyoming. While it seems appropriate to keep a weather eye on the warning signs listed above, the best available evidence suggests that teacher salaries in Wyoming are more than sufficient to attract and retain a highly

qualified labor force. Therefore policymakers may wish to turn their attention to ensuring that the quality and effectiveness of the labor force is commensurate with those high salaries.

Bibliography

Allegretto, S.A., Corcoran, S.P., & Mishel, L. (2004). How does teacher pay compare? Methodological challenges and answers. Wyoming, DC, Economic Policy Institute.

Bureau of Labor Statistics. (2003). Technical Notes for the May 2003 OES Estimates. Retrieved May 19, 2005, from http://stats.bls.gov/oes/2003/may/oes_tec.htm.

Chambers, J.G. (1998). Geographic Variations in Public Schools' Costs (NCES 98-04). U.S. Department of Education. Wyoming, DC: National Center for Education Statistics Working Paper.

Chambers, J.G. (1997). Volume III—The Measurement of School Input Price Differences: A Technical Report on Geographic and Inflationary Differences in the Prices of Public School Inputs. U.S. Department of Education, National Center for Education Statistics. Wyoming, DC: U.S. Government Printing Office.

Goldhaber, D.D. (1999). An Alternative Measure of Inflation in Teacher Salaries. In W.J. Fowler, Jr. (Ed.), Selected Papers in School Finance, 1997–99 (NCES 1999-334) (pp. 29–54). U.S. Department of Education. Wyoming, DC: National Center for Education Statistics.

Ruggles, S., Sobek, M., Alexander, T., Fitch, C., Goeken, R., Hall, P., King, M., and Ronnander, C. (2003). Integrated Public Use Microdata Series: Version 3.0 (machine-readable database). Minneapolis, MN: Minnesota Population Center. Retrieved October 29, 2004, from http://www.ipums.org.

Taylor L.L. 2008. Washington Wages: An Analysis of Educator and Comparable Non-educator Wages in the State of Washington, A report to the Joint Task Force on Basic Education Finance. Retrieved December 1, 2010 from http://www.leg.wa.gov/JointCommittees/BEF/Documents/Mtg11-10_11-08/WAWagesDraftRpt.pdf

Taylor, L.L. 2008. Comparing Teacher Salaries: Insights from the U.S. Census. *Economics of Education Review*, 27(1): 48-57.

Taylor, L.L. 2006. Comparable Wages, Inflation and School Finance Equity. *Education Finance and Policy*. 1(3): 349-71.

Taylor, L.L., and W.J. Fowler, Jr.. 2006. A Comparable Wage Approach to Geographic Cost Adjustment NCES 2006–321. Wyoming, D.C.: National Center for Education Statistics.

Appendix A: Updating the NCES Comparable Wage Index

The basic premise of the CWI is that all types of workers demand higher wages in areas with a higher cost of living or a lack of amenities. One should be able to measure the effect of teacher wages of differences in amenities and the cost of living by observing systematic variations in the earnings of comparable workers who are not educators. If Laramie construction workers are paid 5 percent less than the national average construction wage, Laramie engineers are paid 5 percent less than the national average engineering wage, Laramie nurses are paid 5 percent less than the national average nursing wage, and so on, then the cost of hiring teachers in Laramie should also be paid 5 percent less than the national average.

The NCES CWI measures the prevailing wage for college graduates in 800 U.S. Labor markets. The baseline estimates (for 1999) come from a regression analysis of the individual earnings data from the 2000 U.S. Census. Annual updates to that baseline come from regression analyses of occupational earnings data provided by the U.S. Bureau of Labor Statistics (BLS).[7]

The baseline analysis yields predicted wages in each labor market, adjusted for regional differences in worker characteristics and the mix of industries and occupations in each location. As such, the NCES CWI does not indicate that the wage level is low in an area simply because most of the workers are young and inexperienced, nor does it indicate that the wage level is low in an area simply because there are a disproportionate number of low-skill jobs. Rather, the NCES CWI isolates the regional variation in wages that is attributable specifically to differences in location.

The labor markets in the NCES CWI are based on "place-of-work areas" as defined by the Census Bureau for the 2000 Census. Census place-of-work areas are geographic regions designed to contain at least 100,000 persons. The place-of-work areas do not cross state boundaries and generally follow the boundaries of county groups, single counties, or census-defined places (Ruggles et al. 2003). Counties in sparsely-populated parts of a state are clustered together into a single Census place-of-work area. Each labor market in the NCES CWI is either a single place of work, or a cluster of the places-of-work that comprise a metropolitan area. There are four NCES CWI labor markets in the state of Wyoming—Western Wyoming (Park, Teton, Sublette, Sweetwater, Lincoln and Unita counties), Central Wyoming (Fremont, Natrona and Carbon counties), Eastern Wyoming (Big Horn, Hot Springs, Washakie, Sheridan, Johnson, Campbell, Crook, Converse, Niobrara, Platte, Goshen and Weston counties) and the Cheyenne and Laramie metropolitan areas (Albany and Laramie counties).

Taylor and Fowler (2006) used data from the Bureau of Labor Statistics' Occupational Employment Survey (OES) to extend the baseline estimates of the NCES CWI and provide annual index values for 1997 through 2005. The OES is a BLS database that contains average annual earnings by occupation for states and metropolitan areas. Each year, the BLS samples and

[7] For more on the estimation of the NCES CWI, see Taylor and Fowler (2006).

contacts approximately 400,000 civilian, nonfarm establishments for the OES survey.[8] Survey respondents in the 2009 OES dataset employed 74.5 percent of the civilian, nonfarm workers in the United States.

When extending the baseline CWI, Taylor and Fowler used the OES data to estimate an occupationally adjusted wage in each labor market area, and then adjusted the baseline NCES CWI to reflect the annual growth in those wage estimates in each location.[9] For example, if their analysis of the OES data indicated that the wage level in Laramie increased by 5 percent between 1999 and 2001, they revised the baseline CWI for Laramie upward by 5 percent to generate an estimate of the Laramie CWI in 2001.

Following the same methodology as in that earlier work, I have updated the NCES CWI through 2009. Thus, I have used OES data for 2006, 2007, 2008 and 2009 to estimate the occupationally adjusted wage level in each state and major metropolitan area in the United States. Using those estimates, I have also calculated the implied average wage level in the non-metropolitan remainder of each state. I then calculated the annual rate of change in the OES wage estimates and adjusted the baseline CWI accordingly.

Table 1 presents the updated values of the NCES CWI for the 4 labor market areas in Wyoming. As the table illustrates, the wage differences among Wyoming labor market areas have remained generally stable over the last five years. Wages were 9.7 percent higher in Western Wyoming than in Cheyenne and Laramie in 2005 and 9.5 percent higher in 2009. The only exception is Central Wyoming, where wage levels went from below the state average in 2005 to slightly above the state average in 2009.

Table A.1: Comparable Wage Index Values

	NCES CWI 2005	Updated CWI 2006	Updated CWI 2007	Updated CWI 2008	Updated CWI 2009
Cheyenne and Laramie	0.999	1.035	1.086	1.155	1.196
Eastern Wyoming	0.983	1.023	1.069	1.134	1.183
Central Wyoming	1.010	1.080	1.135	1.202	1.238
Western Wyoming	1.096	1.141	1.191	1.265	1.319
State average	1.024	1.072	1.122	1.191	1.237
National average	1.265	1.313	1.355	1.408	1.437

[8] Details on the OES survey come from Bureau of Labor Statistics (2003).

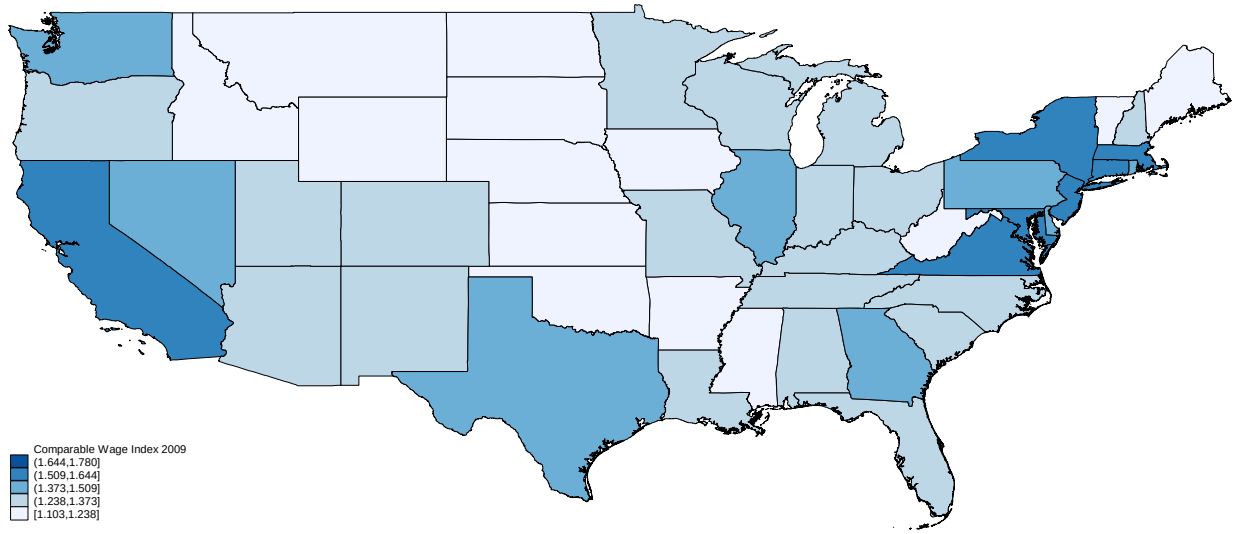
[9] The local wage level is a weighted average of the local predicted wages by occupation, where the weights are each occupation's share of total employment among the national sample of college graduates in the census database. Thus, occupations that are held only rarely by college graduates are given little weight in the construction of the OES wage levels, while occupations that employ college graduates intensively are given greater weight. See Appendix A of Taylor and Fowler (2006) for details.

Meanwhile, the difference between Wyoming and the national average has narrowed substantially. In 2005, the prevailing wage for college graduates in Wyoming was 81 percent of the national average; in 2009, it was 86 percent.

The updated CWI also indicates substantial increases in the cost of college educated labor between 2005 and 2009. On average, wages for college graduates in Wyoming increased 4.8 percent per year over the four-year period.

Figure A.1 illustrates the state-to-state variation in the CWI. As the figure illustrates, the prevailing wage for college graduates in highest in California and along the eastern seaboard. It is lowest in the Great Plains and Mountain West. The CWI for Wyoming is among the lowest in the nation, but comparable to that for the surrounding states.

Figure A.1: The Updated CWI for 2009



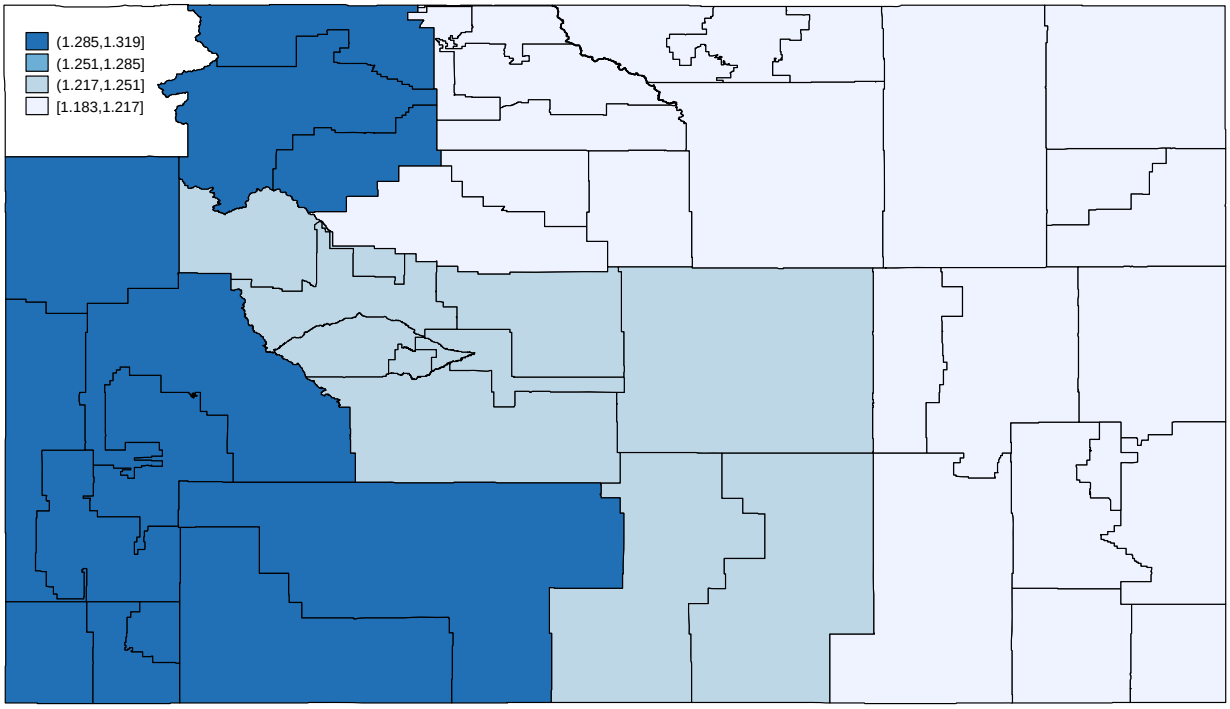
Source: Author's calculations using OES data and the NCES CWI

Each Wyoming school district has been matched to the CWI for its corresponding county. Figure A.2 illustrates the updated CWI for 2009 for each Wyoming school district. As the figure illustrates, there is little different between the CWIs for Cheyenne and Laramie and the rest of eastern Wyoming. The prevailing wage for college graduates is substantially higher in Western Wyoming than in other parts of the state.

The wage differentials indicated by the updated NCES CWI are large, but they are dwarfed by the differences in the cost of housing. According to the U.S. Department of Housing and Urban Development (HUD), the fair market rent for a two-bedroom apartment in Teton county was $1,155 per month in 2009, while the fair market rent for a comparable two-bedroom apartment was $709 in Cheyenne and $577 in Carbon County. Because housing costs are the primary determinants of the cost of living, the HUD data suggest that the cost of living in Teton County is nearly double the cost of living in some other parts of Wyoming. A smaller variation in wages

than in housing costs implies that the relatively high rent parts of the state must also boast local amenities that make people willing to accept a lower real wage than they would otherwise require. In other words, the attractions of living in Cheyenne or Teton county make people willing to accept salaries that are not high enough to fully offset the higher cost of housing.

Figure A.2: The Updated CWI for Wyoming School Districts



Source: Author's calculations using OES data and the NCES CWI

Table B.1: The Hedonic Salary Model for All Teachers, 2007-08

	Coefficient	Standard Error	
Percent time teaching	0.236	0.012	***
BA	-0.005	0.003	
MA	0.061	0.003	***
PhD	0.032	0.005	***
Years of district experience (log)	0.024	0.001	***
Years of total experience (log)	0.116	0.001	***
Experience missing indicator	0.304	0.005	***
Non-teaching assignments			
Other administrator	0.030	0.002	***
Advisor/sponsor	0.025	0.001	***
Assistant principal	0.161	0.014	***
Assistant coach	0.058	0.001	***
Classified staff position	0.011	0.003	***
Coach	0.065	0.001	***
Head teacher	0.044	0.004	***
Principal	0.236	0.011	***
Support staff position	0.032	0.001	***
Professional tutor	0.013	0.003	***
Teaching assignments			
Fine Arts	0.004	0.006	
Elementary education	0.005	0.002	***
English	0.002	0.002	
Bilingual/ESL	0.024	0.006	***
Foreign Language	0.006	0.005	
Health and Physical Education	0.003	0.003	
Mathematics	-0.001	0.002	
Science	0.003	0.002	
Special Education	0.003	0.002	
Social Science	-0.001	0.003	
Vocational/technical	-0.001	0.003	
R-squared		0.9633	
Number of observations		79,290	
Number of individual teachers		13,441	

Note: The model also includes individual teacher fixed effects and school district-by-year- fixed effects. The asterisks indicate a coefficient that is significant at the 1-percent (***) or 5-percent(**) level.

Table B.2: The Characteristics of the Average Wyoming Teacher, 2009-10

	Mean	Standard Deviation
FTE Total Salary	$58,325.57	10330.85
Percent time teaching	0.9982	0.0276
BA	0.5557	0.4969
MA	0.4252	0.4944
PhD	0.0085	0.0920
Years of district experience (log)	2.0304	1.0446
Years of total experience (log)	2.3946	0.9568
Experience missing indicator	0.0075	0.0862
Non-teaching assignments		
Other administrator	0.0212	0.1441
Advisor	0.1695	0.3753
Assistant principal	0.0003	0.0186
Assistant coach	0.1060	0.3079
Classified staff position	0.0074	0.0856
Coach, non football	0.0580	0.2337
Head teacher	0.0025	0.0503
Principal	0.0012	0.0339
Support staff position	0.1511	0.3582
Professional tutor	0.0340	0.1812
Teaching assignments		
Fine Arts	0.0627	0.2424
Elementary education	0.3042	0.4601
English	0.0811	0.2731
Bilingual/ESL	0.0070	0.0836
Foreign Language	0.0202	0.1406
Health and Physical Education	0.0573	0.2324
Mathematics	0.0596	0.2367
Science	0.0512	0.2204
Special Education	0.1244	0.3300
Social Science	0.0483	0.2144
Vocational/technical	0.0551	0.2282

Table B.3The Occupations Used to Generate the Baseline Comparable Wage

Occupation	Percent
Chief Executives	2.142
General and Operations Managers	1.589
Legislators	0.037
Advertising and Promotions Managers	0.181
Marketing and Sales Managers	2.421
Public Relations Managers	0.163
Administrative Services Managers	0.142
Computer and Information Systems Managers	0.811
Financial Managers	2.054
Human Resources Managers	0.786
Industrial Production Managers	0.488
Purchasing Managers	0.390
Transportation, Storage, and Distribution Managers	0.207
Farm, Ranch, and Other Agricultural Managers	0.097
Construction Managers	0.478
Education Administrator	0.891
Engineering Managers	0.494
Food Service Managers	0.338
Funeral Directors	0.042
Gaming Managers	0.026
Lodging Managers	0.123
Medical and Health Services Managers	0.891
Natural Sciences Managers	0.070
Postmasters and Mail Superintendents	0.036
Property, Real Estate, and Community Association Managers	0.388
Social and Community Service Managers	0.617
Managers, All Other	3.437
Agents and Business Managers of Artists, Performers, and Athletes	0.049
Purchasing Agents and Buyers, Farm Products	0.013
Wholesale and Retail Buyers, Except Farm Products	0.219
Purchasing Agents, Except Wholesale, Retail, and Farm Products	0.341
Claims Adjusters, Appraisers, Examiners, and Investigators	0.457
Other Compliance Officers	0.177
Cost Estimators	0.112
Human Resources, Training, and Labor Relations Specialists	1.459
Logisticians	0.061
Management Analysts	0.989
Meeting and Convention Planners	0.053
Other Business Operations Specialists	0.297
Accountants and Auditors	4.117
Appraisers and Assessors of Real Estate	0.111
Budget Analysts	0.106

Occupation	Percent
Credit Analysts	0.060
Financial Analysts	0.143
Personal Financial Advisors	0.529
Insurance Underwriters	0.149
Financial Examiners	0.037
Loan Counselors and Officers	0.538
Tax Examiners, Collectors, and Revenue Agents	0.126
Tax Preparers	0.077
Financial Specialists, All Other	0.073
Computer Scientists and Systems Analysts	1.423
Computer Programmers	1.449
Computer Software Engineers	2.036
Computer Support Specialists	0.526
Database Administrators	0.182
Network and Computer Systems Administrators	0.333
Network Systems and Data Communication Analysts	0.533
Actuaries	0.073
Operations Research Analysts	0.246
Miscellaneous Mathematical Science Occupations	0.092
Architects, Except Naval	0.464
Surveyors, Cartographers, and Photogrammetrists	0.092
Aerospace Engineers	0.530
Chemical Engineers	0.219
Civil Engineers	0.808
Computer Hardware Engineers	0.145
Electrical and Electronics Engineers	0.907
Environmental Engineers	0.125
Industrial Engineers, Including Health and Safety	0.457
Marine Engineers	0.029
Materials Engineers	0.093
Mechanical Engineers	0.719
Nuclear Engineers	0.031
Petroleum, Mining and Geological Engineers	0.062
Miscellaneous Engineers, Including Agricultural and Biomedical	0.906
Drafters	0.141
Engineering Technicians, Except Drafters	0.246
Surveying and Mapping Technicians	0.015
Agricultural and Food Scientists	0.080
Biological Scientists	0.309
Conservation Scientists and Foresters	0.110
Medical Scientists	0.296
Astronomers and Physicists	0.075
Atmospheric and Space Scientists	0.031

Occupation	Percent
Chemists and Materials Scientists	0.365
Environmental Scientists and Geoscientists	0.020
Physical Scientists, All Other	0.054
Economists	0.012
Market and Survey Researchers	0.022
Psychologists	0.072
rban and Regional Planners	0.090
Miscellaneous Social Scientists, Including Sociologists	0.106
Agricultural and Food Science Technicians	0.025
Biological Technicians	0.034
Chemical Technicians	0.093
Geological and Petroleum Technicians	0.012
Miscellaneous Life, Physical, and Social Science Technicians	0.166
Counselors	0.879
Social Workers	1.717
Miscellaneous Community and Social Service Specialists	0.554
Clergy	1.206
Directors, Religious Activities and Education	0.104
Religious Workers, All Other	0.128
Lawyers	2.069
Judges, Magistrates, and Other Judicial Workers	0.187
Paralegals and Legal Assistants	0.386
Miscellaneous Legal Support Workers	0.215
Postsecondary Teachers	3.279
Artists and Related Workers	0.184
Designers	0.821
Actors	0.025
Producers and Directors	0.285
Athletes, Coaches, Umpires, and Related Workers	0.180
Dancers and Choreographers	0.007
Musicians, Singers, and Related Workers	0.118
Entertainers and Performers, Sports and Related Workers, All Other	0.014
Announcers	0.053
News Analysts, Reporters, and Correspondents	0.232
Public Relations Specialists	0.310
Editors	0.452
Technical Writers	0.174
Writers and Authors	0.215
Miscellaneous Media and Communications Workers	0.044
Broadcast and Sound Engineering Technicians and Radio Operators	0.081
Photographers	0.074
Television, Video, and Motion Picture Camera Operators and Editors	0.033
Chiropractors	0.040

Occupation	Percent
Dentists	0.157
Dietitians and Nutritionists	0.161
Optometrists	0.045
Pharmacists	0.679
Physicians and Surgeons	1.851
Physician Assistants	0.121
Podiatrists	0.013
Registered Nurses	4.245
Audiologists	0.032
Occupational Therapists	0.152
Physical Therapists	0.360
Radiation Therapists	0.014
Recreational Therapists	0.042
Respiratory Therapists	0.088
Speech-Language Pathologists	0.103
Therapists, All Other	0.156
Veterinarians	0.127
Health Diagnosing and Treating Practitioners, All Other	0.007
Clinical Laboratory Technologists and Technicians	0.608
Dental Hygienists	0.120
Diagnostic Related Technologists and Technicians	0.170
Emergency Medical Technicians and Paramedics	0.055
Health Diagnosing and Treating Practitioner Support Technicians	0.123
Licensed Practical and Licensed Vocational Nurses	0.187
Medical Records and Health Information Technicians	0.042
Opticians, Dispensing	0.021
Miscellaneous Health Technologists and Technicians	0.063
Other Healthcare Practitioners and Technical Occupations	0.152
Nursing, Psychiatric, and Home Health Aides	0.336
Occupational Therapist Assistants and Aides	0.003
Physical Therapist Assistants and Aides	0.030
Massage Therapists	0.024
Dental Assistants	0.051
Medical Assistants and Other Healthcare Support Occupations	0.182
First-Line Supervisors/Managers of Correctional Officers	0.053
First-Line Supervisors/Managers of Police and Detectives	0.153
First-Line Supervisors/Managers of Fire Fighting and Preventions Workers	0.041
Supervisors, Protective Service Workers, All Other	0.093
Fire Fighters	0.131
Fire Inspectors	0.016
Bailiffs, Correctional Officers, and Jailers	0.182
Detectives and Criminal Investigators	0.225
Miscellaneous Law Enforcement Workers	0.011

Occupation	Percent
Police Officers	0.671
Animal Control Workers	0.004
Private Detectives and Investigators	0.090
Security Guards and Gaming Surveillance Officers	0.271
Crossing Guards	0.002
Lifeguards and Other Protective Service Workers	0.027
Chefs and Head Cooks	0.081
First-Line Supervisors/Managers of Food Preparation and Serving Workers	0.144
Cooks	0.122
Food Preparation Workers	0.035
Bartenders	0.110
Combined Food Preparation and Serving Workers, Including Fast Food	0.021
Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	0.009
Waiters and Waitresses	0.330
Food Servers, Nonrestaurant	0.018
Dining Room and Cafeteria Attendants, Bartender Helpers, and Misc.	0.013
Dishwashers	0.007
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	0.020
First-Line Supervisors/Managers of Housekeeping and Janitorial Workers	0.041
First-Line Supervisors/Managers of Groundskeepers	0.049
Janitors and Building Cleaners	0.153
Maids and Housekeeping Cleaners	0.058
Pest Control Workers	0.014
Grounds Maintenance Workers	0.109
First-Line Supervisors/Managers of Gaming Workers	0.045
First-Line Supervisors/Managers of Personal Service Workers	0.070
Animal Trainers	0.009
Nonfarm Animal Caretakers	0.029
Gaming Services Workers	0.034
Motion Picture Projectionists	0.002
Ushers, Lobby Attendants, and Ticket Takers	0.009
Miscellaneous Entertainment Attendants and Related Workers	0.035
Funeral Service Workers	0.005
Barbers	0.005
Hairdressers, Hairstylists, and Cosmetologists	0.058
Miscellaneous Personal Appearance Workers	0.020
Baggage Porters, Bellhops, and Concierges	0.021
Tour and Travel Guides	0.022
Transportation Attendants	0.107
Child Care Workers	0.170
Personal and Home Care Aides	0.053
Recreation and Fitness Workers	0.222
Residential Advisors	0.037

Occupation	Percent
Personal Care and Service Workers, All Other	0.009
First-Line Supervisors/Managers of Retail Sales Workers	1.719
First-Line Supervisors/Managers of Non-Retail Sales Workers	1.083
Cashiers	0.342
Counter and Rental Clerks	0.033
Parts Salespersons	0.028
Retail Salespersons	1.559
Advertising Sales Agents	0.330
Insurance Sales Agents	0.552
Securities, Commodities, and Financial Services Sales Agents	0.763
Travel Agents	0.101
Sales Representatives, Services, All Other	0.837
Sales Representatives, Wholesale and Manufacturing	1.957
Models, Demonstrators, and Product Promoters	0.016
Real Estate Brokers and Sales Agents	0.486
Sales Engineers	0.085
Telemarketers	0.061
Door-To-Door Sales Workers, News and Street Vendors, and Related Workers	0.033
Sales and Related Workers, All Other	0.302
First-Line Supervisors/Managers of Office and Administrative Support Workers	1.582
Switchboard Operators, Including Answering Service	0.016
Telephone Operators	0.021
Communications Equipment Operators, All Other	0.007
Bill and Account Collectors	0.099
Billing and Posting Clerks and Machine Operators	0.170
Bookkeeping, Accounting, and Auditing Clerks	0.649
Gaming Cage Workers	0.003
Payroll and Timekeeping Clerks	0.089
Procurement Clerks	0.031
Tellers	0.109
Brokerage Clerks	0.011
Court, Municipal, and License Clerks	0.046
Credit Authorizers, Checkers, and Clerks	0.038
Customer Service Representatives	1.261
Eligibility Interviewers, Government Programs	0.092
File Clerks	0.098
Hotel, Motel, and Resort Desk Clerks	0.039
Interviewers, Except Eligibility and Loan	0.094
Library Assistants, Clerical	0.088
Loan Interviewers and Clerks	0.079
New Accounts Clerks	0.011

Occupation	Percent
Correspondence Clerks and Order Clerks	0.058
Human Resources Assistants, Except Payroll and Timekeeping	0.036
Receptionists and Information Clerks	0.279
Reservation and Transportation Ticket Agents and Travel Clerks	0.124
Information and Record Clerks, All Other	0.042
Cargo and Freight Agents	0.010
Couriers and Messengers	0.062
Dispatchers	0.087
Meter readers, Utilities	0.010
Postal Service Clerks	0.093
Postal Service Mail Carriers	0.184
Postal Service Mail Sorters, Processors, and Processing Machine Operators	0.067
Production, Planning and Expediting Clerks	0.328
Shipping, Receiving, and Traffic Clerks	0.110
Stock Clerks and Order Filers	0.208
Weighers, Measurers, Checkers, and Samplers, Record keeping	0.025
Secretaries and Administrative Assistants	1.584
Computer Operators	0.180
Data Entry Keyers	0.210
Word Processors and Typists	0.056
Desktop Publishers	0.015
Insurance Claims and Policy Processing Clerks	0.152
Mail Clerks and Mail Machine Operators, Except Postal Service	0.032
Office Clerks, General	0.501
Office Machine Operators, Except Computer	0.015
Proofreaders and Copy Markers	0.022
Statistical Assistants	0.025
Office and Administrative Support Workers, All Other	0.506
First-Line Supervisors/Managers of Farming, Fishing, and Forestry Workers	0.034
Agricultural Inspectors	0.017
Graders and Sorters, Agricultural Products	0.004
Miscellaneous Agricultural Workers, Including Animal Breeders	0.102
Fishing and Hunting Workers	0.004
Forest and Conservation Workers	0.006
Logging Workers	0.007
First-Line Supervisors/Managers of Construction and Extraction Workers	0.233
Boilermakers	0.002
Brickmasons, Blockmasons, and Stonemasons	0.009
Carpenters	0.151
Carpet, Floor, and Tile Installers and Finishers	0.013
Cement Masons, Concrete Finishers, and Terrazzo Workers	0.004
Construction Laborers	0.090
Paving, Surfacing, and Tamping Equipment Operators	0.000

Occupation	Percent
Miscellaneous Construction Equipment Operators	0.027
Drywall Installers, Ceiling Tile Installers, and Tapers	0.009
Electricians	0.124
Glaziers	0.004
Insulation Workers	0.004
Painters, Construction and Maintenance	0.045
Paperhangers	0.001
Pipelayers, Plumbers, Pipefitters, and Steamfitters	0.060
Plasterers and Stucco Masons	0.002
Roofers	0.010
Sheet Metal Workers	0.014
Iron and Steel Workers	0.005
Helpers, Construction Trades	0.004
Construction and Building Inspectors	0.056
Elevator Installers and Repairers	0.006
Fence Erectors	0.001
Hazardous Materials	0.007
Highway Maintenance Workers	0.010
Rail-Track Laying and Maintenance Equipment Operators	0.001
Septic Tank Servicers and Sewer Pipe Cleaners	0.001
Miscellaneous Construction and Related Workers	0.003
Derrick, Rotary Drill, and Service Unit Operators, and Roustabouts	0.002
Earth Drillers, Except Oil and Gas	0.002
Explosives Workers, Ordnance Handling Experts, and Blasters	0.002
Mining Machine Operators	0.006
Miscellaneous Extraction Workers, Including Roof Bolters and Helpers	0.003
First-Line Supervisors/Managers of Mechanics, Installers, and Repairers	0.169
Computer, Automated Teller, and Office Machine Repairers	0.149
Radio and Telecommunications Equipment Installers and Repairers	0.080
Avionics Technicians	0.004
Electric Motor, Power Tool, and Related Repairers	0.007
Electrical and Electronics Repairers, Industrial, Utility, and Transportation Equip.	0.006
Electronic Equipment Installers and Repairers, Motor Vehicles	0.007
Electronic Home Entertainment Equipment Installers and Repairers	0.009
Security and Fire Alarm Systems Installers	0.009
Aircraft Mechanics and Service Technicians	0.051
Automotive Body and Related Repairers	0.011
Automotive Glass Installers and Repairers	0.001
Automotive Service Technicians and Mechanics	0.077
Bus and Truck Mechanics and Diesel Engine Specialists	0.023
Heavy Vehicle and Mobile Equipment Service Technicians and Mechanics	0.020
Small Engine Mechanics	0.005

Occupation	Percent
Miscellaneous Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	0.004
Control and Valve Installers and Repairers	0.004
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	0.031
Home Appliance Repairers	0.005
Industrial and Refractory Machinery Mechanics	0.069
Maintenance and Repair Workers, General	0.083
Maintenance Workers, Machinery	0.003
Millwrights	0.010
Electrical Power-Line Installers and Repairers	0.015
Telecommunications Line Installers and Repairers	0.038
Precision Instrument and Equipment Repairers	0.027
Coin, Vending, and Amusement Machine Servicers and Repairers	0.008
Locksmiths and Safe Repairers	0.004
Manufactured Building and Mobile Home Installers	0.001
Riggers	0.001
Helpers--Installation, Maintenance, and Repair Workers	0.001
Other Installation, Maintenance, and Repair Workers	0.047
First-Line Supervisors/Managers of Production and Operating Workers	0.686
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	0.001
Electrical, Electronics, and Electromechanical Assemblers	0.041
Engine and Other Machine Assemblers	0.004
Structural Metal Fabricators and Fitters	0.004
Miscellaneous Assemblers and Fabricators	0.148
Bakers	0.022
Butchers and Other Meat, Poultry, and Fish Processing Workers	0.023
Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders	0.002
Food Batch-makers	0.009
Food Cooking Machine Operators and Tenders	0.001
Computer Control Programmers and Operators	0.011
Extruding and Drawing Machine Setters, Operators, and Tenders	0.002
Forging Machine Setters, Operators, and Tenders	0.001
Rolling Machine Setters, Operators, and Tenders	0.001
Cutting, Punching, and Press Machine Setters, Operators, and Tenders	0.011
Drilling and Boring Machine Tool Setters, Operators, and Tenders	0.001
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders	0.006
Lathe and Turning Machine Tool Setters, Operators, and Tenders	0.002
Machinists	0.057
Metal Furnace and Kiln Operators and Tenders	0.004
Model Makers and Patternmakers, Metal and Plastic	0.006
Molders and Molding Machine Setters, Operators, and Tenders	0.009

Occupation	Percent
Tool and Die Makers	0.019
Welding, Soldering, and Brazing Workers	0.039
Heat Treating Equipment Setters, Operators, and Tenders	0.001
Lay-Out Workers, Metal and Plastic	0.002
Plating and Coating Machine Setters, Operators, and Tenders	0.002
Tool Grinders, Filers, and Sharpeners	0.001
Other Metal Workers and Plastic Workers, Including Milling, Planing, and Machine Tool Operators	0.068
Bookbinders and Bindery Workers	0.007
Job Printers	0.016
Prepress Technicians and Workers	0.034
Printing Machine Operators	0.034
Laundry and Dry-Cleaning Workers	0.015
Pressers, Textile, Garment, and Related Materials	0.004
Sewing Machine Operators	0.024
Shoe and Leather Workers and Repairers	0.001
Shoe Machine Operators and Tenders	0.001
Tailors, Dressmakers, and Sewers	0.017
Textile Bleaching and Dyeing Machine Operators and Tenders	0.001
Textile Cutting Machine Setters, Operators, and Tenders	0.001
Textile Knitting and Weaving Machine Setters, Operators, and Tenders	0.003
Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	0.002
Upholsterers	0.004
Miscellaneous Textile, Apparel, and Furnishings Workers, Except Upholsterers	0.009
Cabinetmakers and Bench Carpenters	0.011
Furniture Finishers	0.004
Sawing Machine Setters, Operators, and Tenders, Wood	0.006
Woodworking Machine Setters, Operators, and Tenders, Except Sawing	0.004
Miscellaneous Woodworkers, Including Model Makers and Patternmakers	0.006
Power Plant Operators, Distributors, and Dispatchers	0.021
Stationary Engineers and Boiler Operators	0.036
Water and Liquid Waste Treatment Plant and System Operators	0.030
Miscellaneous Plant and System Operators	0.014
Chemical Processing Machine Setters, Operators, and Tenders	0.030
Crushing, Grinding, Polishing, Mixing, and Blending Workers	0.016
Cutting Workers	0.008
Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	0.004
Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders	0.003
Inspectors, Testers, Sorters, Samplers, and Weighers	0.348
Jewelers and Precious Stone and Metal Workers	0.014

Occupation	Percent
Medical, Dental, and Ophthalmic Laboratory Technicians	0.032
Packaging and Filing Machine Operators and Tenders	0.025
Painting Workers	0.014
Photographic Process Workers and Processing Machine Operators	0.035
Cementing and Gluing Machine Operators and Tenders	0.002
Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders	0.001
Etchers and Engravers	0.003
Molders, Shapers, and Casters, Except Metal and Plastic	0.007
Paper Goods Machine Setters, Operators, and Tenders	0.006
Tire Builders	0.003
Helpers--Production Workers	0.004
Other Production Workers	0.189
Supervisors, Transportation and Material Moving Workers	0.128
Aircraft Pilots and Flight Engineers	0.301
Air Traffic Controllers and Airfield Operations Specialists	0.044
Bus Drivers	0.060
Driver/Sales Workers and Truck Drivers	0.399
Taxi Drivers and Chauffeurs	0.062
Miscellaneous Motor Vehicle Operators	0.003
Locomotive Engineers and Operators	0.019
Railroad Brake, Signal, and Switch Operators	0.002
Railroad Conductors and Yardmasters	0.019
Subway, Streetcar, and Other Rail Transportation Workers	0.003
Sailors and Marine Oilers	0.004
Ship and Boat Captains and Operators	0.015
Ship Engineers	0.004
Parking Lot Attendants	0.009
Service Station Attendants	0.014
Transportation Inspectors	0.021
Miscellaneous Transportation Workers	0.007
Crane and Tower Operators	0.008
Dredge, Excavating, and Loading Machine Operators	0.004
Hoist and Winch Operators	0.001
Industrial Truck and Tractor Operators	0.035
Cleaners of Vehicles and Equipment	0.018
Laborers and Freight, Stock, and Material Movers, Hand	0.193
Machine Feeders and Offbearers	0.006
Packers and Packagers, Hand	0.034
Pumping Station Operators	0.005
Refuse and Recyclable Material Collectors	0.007
Miscellaneous Material Moving Workers	0.009