Appendix A

Teacher Supply in Wyoming: The Professional Teaching Standards Board and School District Recruitment Needs

Monitoring School District Cost Pressures

A Report to the Wyoming Joint Appropriations Interim Committee and the Joint Education Interim Committee

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Research & Planning
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Teacher Supply in Wyoming

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As student enrollment continues to increase and the working population continues to age, the availability of teachers will become crucial. To say there will be a need for teachers within the next 10 years is too simplistic as there are a variety of subject areas (e.g., mathematics, reading, art) and grade levels taught in K-12 public schools around the country. The replacement need of individual school districts is becoming increasingly complex, and a deeper level of analysis is required to understand which subjects and grade levels within districts will drive the need for teachers in the future. A primary goal of this chapter is to provide an exploratory analysis of the teachers currently licensed by the Wyoming Professional Teaching Standards Board (PTSB) to include demographic and wage analysis both statewide and at the district level in understanding teacher supply.

The PTSB licenses individuals to teach in Wyoming public schools. The primary license types the PTSB grants are the standard and professional, and the substitute permit. Teachers who wish to be employed in a public school must hold either the standard or professional license. At the time an individual applies and obtains a license, endorsements are added to the license specifying which subjects and grade levels the individual is permitted to teach. In order to demonstrate their eligibility for an endorsement, teachers must obtain a recommendation from their teacher preparation program.

The number of endorsements is not limited as long as the individual the earns a recommendation for endorsement from the teaching preparation program to teach in a specific subject and at a specific grade level. For example, an individual can be endorsed to teach elementary education K-6, mathematics 6-12, and art K-12. We have classified these individuals as "multi-endorsed." These multi-endorsed individuals have invested in their human capital (education, skills, and abilities) in such a way that may be advantageous in an increasingly competitive labor market. Multi-endorsement allows an individual to be available in many subjects and grade levels and their teaching scope can range from classroom to classroom, school to school and district to district. This example illustrates the complexity that teaching endorsements present in labor supply research. The categorization of multi-endorsed individuals will be discussed at length in the method and discussion sections of this chapter.

Considerable differences in teacher retention, retirement, and even once licensed, choosing to work in the school system may be accounted for by PTSB endorsement. Ryan, Healy, and Sullivan (2012) surveyed faculty at a large research university regarding satisfaction, stress, which discipline they taught (e.g., from the arts and humanities to business and engineering), and their intent to leave the university. The authors found that those in the hard/applied disciplines (e.g., business, engineering, medicine) were more likely to consider leaving than those who taught "softer" disciplines such as the arts and humanities. The authors suggest this may be due to more career opportunities outside of teaching and academia for those educated in subjects that are more applied (and

thus may provide more career mobility and higher wages outside of academia). As the majority of high school teachers have a bachelor's degree, gaining a graduate degree in a more marketable field or teaching only until higher paying employment becomes available can limit the school district recruitment pools.

The impact of an aging teacher labor pool and competition with other industries and occupations may leave school districts with a shortage of teachers in specific subjects. As discussed above, individuals educated in more marketable fields outside of teaching may not view teaching as a viable option compared to other occupations and industries. This chapter will describe the individual subjects by grade level which will allow for a more detailed understanding of Wyoming's teacher labor pool such as age, wage, and geographic location.

Further complicating the nature of teacher recruitment is the often rigid pay standards school districts typically follow. Ballou and Podgursky (2001) point out potential issues for school districts in recruiting teachers in those marketable fields (e.g., math and the sciences) because of the pressures of the high salaries offered outside of the public school system. However, the authors also indicate that there is widespread sentiment among teachers that there should be no pay differential based on subjects taught (i.e., a math teacher should not be compensated more than a foreign language teacher). In Wyoming's labor market, natural resources and mining attract individuals holding degrees in engineering, geology, and physics because of the relatively high wages offered especially during periods of economic expansion (which we are not currently in) and potential career mobility. This industry pull can make it more difficult for school districts to recruit these individuals to be science teachers.

Another particular challenge for teacher recruitment is the need for a license in order to teach in a public school. Individuals must take specific courses and complete student teaching requirements in order to obtain a teaching license in any state. The attraction of the teaching profession can be significantly reduced by the prospect of needing to complete a licensure package (e.g., examinations, application, background checks). For a brief overview of college education and occupational licensing, see The Cornerstone: Building an American Public Policy for Educational Attainment and Success in the Labor Market available at this web address: http://doe.state.wy.us/LMI/education.htm. The need for a license presents a potential barrier and may have considerable consequences when specific content areas are taken into account.

Another primary goal of this chapter is to understand the teacher labor pool in two parts. First, we will analyze the demographics of all available teachers by content area to fill potential open positions within Wyoming school districts. The second goal is to understand the demographic and wage characteristics of those endorsed individuals who are currently working in Wyoming's labor force. These analyses will be crucial as the baby boom generation begins to retire and the number of available teachers to fill positions may become increasingly restricted.

The analysis presented in this chapter expands upon current R&P research using WDE (Wyoming Department of Education) staff files (i.e., 602, 652, and

633) in analyzing school district cost pressures. R&P knows of no other state or government entity which has analyzed teacher licensing files to understand the supply of teachers available for school districts. Linking teacher licensing files to administrative datasets (both point-in-time and longitudinally) can only be accomplished by Labor Market Information (LMI) sections of state workforce agencies. The PTSB licensing data are separate from the WDE staffing files that are compiled by districts. The goal of R&P is to combine the PTSB and WDE staffing files to create a supply and demand analysis of public schools in Wyoming. Individuals can, and often are, multi-dimensional in terms of the number and type of endorsements they carry throughout their careers.

In this paper, we discuss 13,594 individuals licensed to teach in Wyoming public schools in the 2010/11 school year. According to WDE staffing files, 7,344 of the 13,594 individuals were contracted to teach in Wyoming school districts.

Methodology

Overview

The Professional Teaching Standard Board's (PTSB) files were combined with R&P's administrative databases to create a profile of teachers licensed during the 2010-2011 school year. The primary administrative database used in this chapter is the unemployment insurance (UI) Wage Records file which is a quarterly collection of wages for UI tax purposes. Each wage record contains social security number, year, quarter, employer, and wages for a specific individual. The PTSB's standard and professional licenses are valid for a period of five years and 10 years, respectively, where specific endorsements can be added or dropped at the request of the licensee.

The PTSB file contained endorsements for each individual licensed to teach in a Wyoming school district by year. A teaching endorsement has both a subject (e.g., mathematics) and grade level (e.g., 6-12) associated with it. In order to understand the complete duration of a licensed individual, each license was divided into year and quarter so the individual could be matched with administrative data (i.e., wage records). For example, if an individual holding a standard license from September 2007 to September 2012 was licensed for a total of 20 quarters (5 years times 4 quarters).

To develop a profile for the 2010/11 school year, each individual's license was spread across the specific years and quarters for which it was valid. The beginning of the school year was defined as the third quarter of each calendar year (July, August, and September) as most schools start in the months of August or September. In order to perform employment and wage analyses, R&P focused on quarterly data as the unit of analysis due to UI payroll (i.e., wage records) being available only in quarterly units.

Demographic variables were obtained using the year of birth from the Department of Motor Vehicles (DMV) Drivers' License database maintained by R&P. DMV files were used due to the overall reliability of birthdate data. Any DMV birthdates that were invalid were replaced by the PTSB birthdate. As most schools start their school year in late

August or early September, each birthdate was subtracted from September 1st of 2010. This allowed for an approximate age when the school year began. All age data is based on this calculation.

Industries are defined using the North American Industry Classification System (NAICS) which is an economic classification used to place establishments into categories. When a primary activity is defined for an establishment, it is placed in the NAICS industry classification that best fits that activity. For more information on NAICS industry classification, please visit www.census.gov/naics.

Annual wages were calculated as a function of primary industry. Teachers are an exception to most occupations in that they have summers where they are not required to work. Teachers may take temporary jobs in the summers and then maintain those jobs even after the school year begins. If an individual earned wages in more than one industry during the school year, their primary industry was set in terms of where their highest wages were earned. For example, if an individual earned wages in public schools (NAICS 611100) and also in Health Care & Social Services (NAICS 62) during a specific school year, their wages were calculated for each industry. In this example, if NAICS 62 accounted for higher wages for the individual then their primary industry would be classified as Health Care & Social Services rather than public schools.

Endorsements and Assigned Content Areas

An endorsement specifies the subject and grade level the licensee is qualified to teach. For example, if an individual is endorsed in mathematics grades 6-12, the PTSB considers this licensee qualified to teach middle school and secondary mathematics from the sixth grade up in any school district in Wyoming.

Due to the complex nature of PTSB endorsements, the number of endorsements was reduced allowing for a more efficient analysis. Overall, 238 different PTSB endorsements appeared in the PTSB data file for the 2010/11 school year. For simplicity and more efficient data analysis, R&P subjectively collapsed the endorsements into 42 assigned content areas (ACAs) with supporting guidance from the PTSB. The subject matter and structure of the classroom for each endorsement was used to create the 42 ACAs used in the analyses. It should be noted that not all of the PTSB's endorsements will be discussed (e.g., driver's education, coaching, gifted and talented, etc.) as this was beyond the scope of this chapter.

Figure A-1 (see page A6) shows an example of the ACA structure using fine arts. As seen in **Figure A-1**, the specific PTSB endorsements of art (at all grade levels), drama, and photography were grouped into the ACA of fine arts. These endorsements were deemed similar in respect to both subject matter (i.e., using creative methods of discovery) and the nature of instruction (i.e., being hands on in nature). Reference Table 1 shows the 194 PTSB endorsements used in the analysis and the 13 ACAs which R&P created to simplify the analyses. Also presented in Reference Table 1 is whether the PTSB was currently issuing this endorsement at the time of this chapter's publication. An individual could still remain endorsed in an inactive content area (e.g., middle school) due to obtaining endorsement at the time the endorsement

was active. For a list of PTSB endorsements not included in the analysis, please see Reference Table 2.

Figure A-2 (see page A7) gives a visual representation of the 13 ACAs included in the analysis. Overall, a total of 13,594 unique individuals were endorsed in these content areas with an average of 1.6 ACAs per individual. Administrative staff (e.g., principals, school nurses, etc.) were not included in the analyses. As mentioned in the introduction, a person is not limited in number of endorsements if they are able to be recommended by their teaching preparation program. Figure A-2 shows that a large number of teachers (42.9%) were endorsed in at least two content areas. This will be discussed in depth in the results section.

Results

Content Area and Employment Status

The introduction of this chapter covered the concept of licenses and endorsements the PTSB currently issues. As discussed in the method section, the PTSB issues a wide range of endorsements. People with multiple endorsements become increasingly difficult to place into specific teaching categories. For this reason, the data were restricted to include

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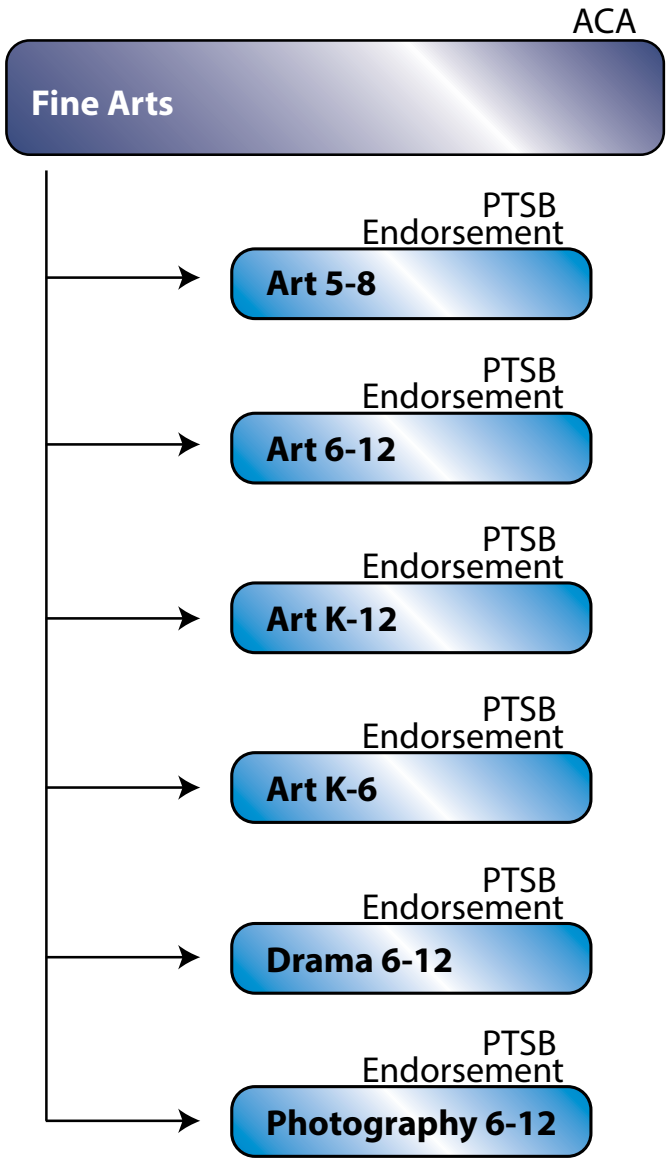
Figure A-1: Assigned Content Area (ACA) Structure of PTSB Endorsements



For entire listing, see Reference Table 1 on page A26.

Figure A-2: Assigned Content Areas (ACA) of Persons Licensed to Teach in Wyoming, 2010/11

There were **13,594 INDIVIDUALS** licensed to teach in Wyoming

Among those individuals, there were **21,067 TOTAL ACAs**

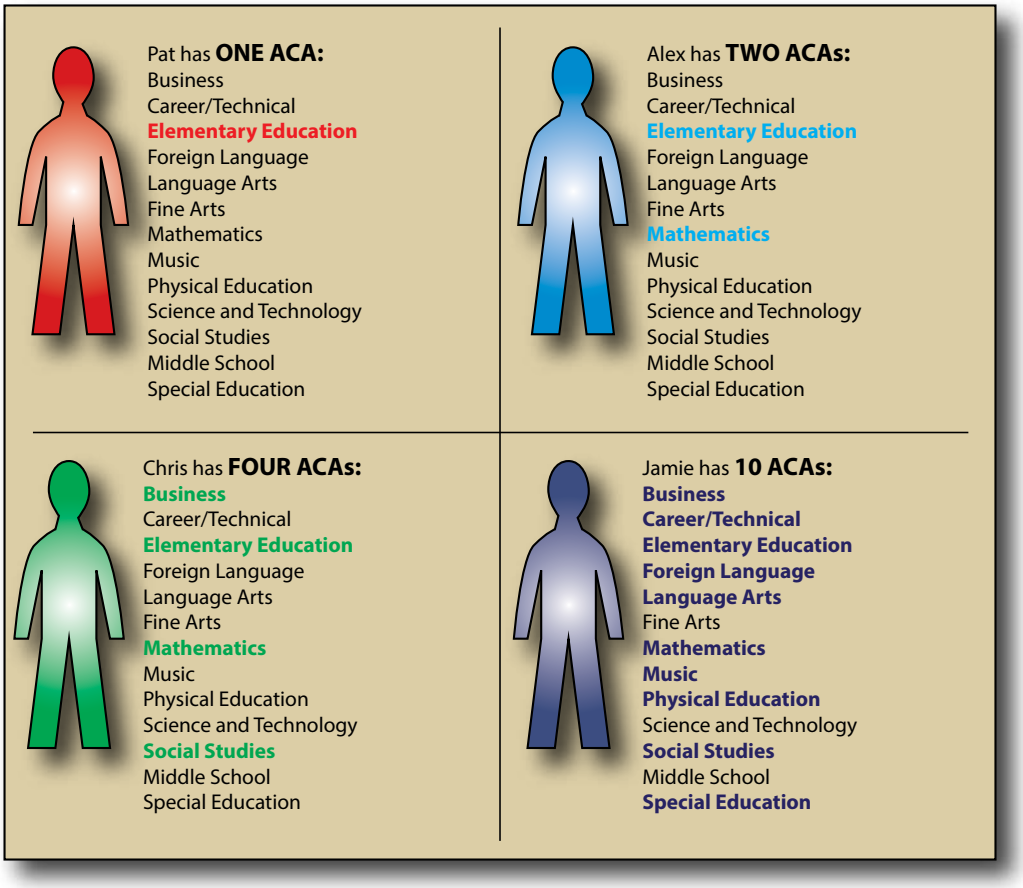
An average of **1.6 ACAs PER INDIVIDUAL**

Of those 13,594 INDIVIDUALS:
- ✓ 7,704 (57.1%) had only ONE ACA → 57.1%
- ✓ 4,560 (33.5%) had TWO ACAs
- ✓ 1,055 (7.5%) had THREE ACAs → 42.9%
- ✓ 275 (1.9%) had FOUR OR MORE ACAs

This research looks at **13 CONTENT AREAS** for teachers in Wyoming's public schools

Each individual could have AS FEW AS ONE ACA or AS MANY AS 13 ACAs

ACAs
Business
Career/Technical
Elementary Education
Foreign Language
Language Arts
Fine Arts
Mathematics
Music
Physical Education
Science and Technology
Social Studies
Middle School
Special Education



Source: Professional Teaching Standards Board Files.

Figure A-2 displays four hypothetical endorsed individuals with varying numbers of Assigned Content Areas (ACAs). Pat was only able to teach elementary education, while Alex was able to teach both elementary education and mathematics. Jamie was able to teach a total of 10 different ACAs; this is rare, but does occur. This example illustrates the difference between the counts of individuals and the counts of ACAs. Jamie would be counted 10 different times in ACA analyses while only once as an individual (one individual with a count of 10 ACAs). Pat counted as one individual with one ACA.

(Text continued from page A6)

only standard and professional licenses as teachers who wish to teach in a Wyoming public school are required to possess one of these license types (excluding substitute teachers). To understand the complete statewide availability (labor and recruitment pool) of teachers, this section focuses on all individuals currently endorsed to teach in Wyoming in the 2010/11 school year.

To facilitate the analyses, **Table A-1** shows the number and percent of individuals endorsed by number of ACAs. As mentioned previously, the number of endorsements is not restricted as long as an individual is endorsed by their teaching preparation program. As seen in Table A-1, the 13,594 individuals who were endorsed in 2010/11 had a total of 21,067 ACAs. We further divided individuals based on the total number of ACAs ranging from one to four or more. Of the 13,594 individuals who were endorsed, 57.1% had only one ACA while a small percentage (1.9%) had four or more ACAs. The ACA counts within the table show the number of individuals endorsed. These counts of ACAs are not mutually exclusive. The counts within the table should be considered endorsements and not individuals.

The counts of ACAs differ significantly across content areas. Only 10 middle school ACAs had no other ACA while 1,160 had at least one other ACA. The most homogeneous content area was music with a total of 124 (or 22.7%) being endorsed in at least one other content area. A significant proportion of ACAs in special education had at least two ACAs (64.7%) with a relatively low number endorsed

Table A-1: **Total Number of Teaching Assigned Content Areas (ACAs) in Wyoming, 2010/11**

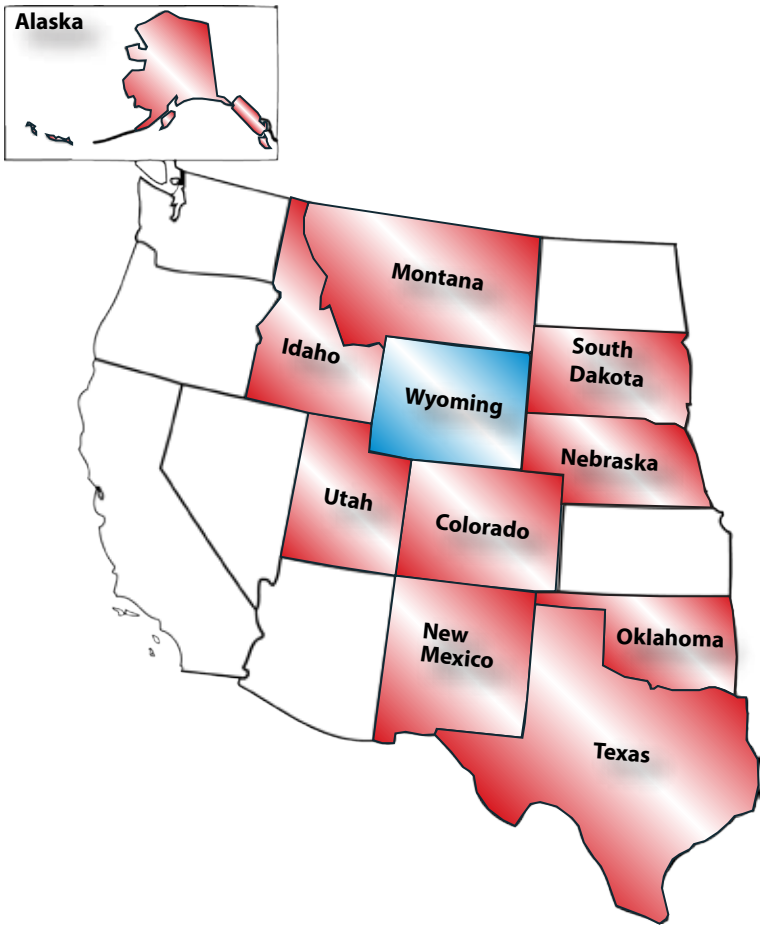
				Multiple ACAs					
	Total ACAs	Only One ACA		Two ACAs		Three ACAs		Four or More ACAs	
Assigned Content Area	N	N	Row %	N	Row %	N	Row %	N	Row %
Business	396	133	33.6%	184	46.5%	65	16.4%	14	3.5%
Career/Technical	381	147	38.6%	165	43.3%	51	13.4%	18	4.7%
Elementary Education	7,065	3,815	54.0%	2,488	35.2%	567	8.0%	195	2.8%
Foreign Language	445	135	30.3%	208	46.7%	82	18.4%	20	4.5%
Language Arts	1,876	514	27.4%	841	44.8%	354	18.9%	167	8.9%
Fine Arts	579	263	45.4%	219	37.8%	80	13.8%	17	2.9%
Mathematics	1,021	350	34.3%	370	36.2%	169	16.6%	132	12.9%
Middle School	1,924	10	0.5%	1,160	60.3%	625	32.5%	129	6.7%
Music	547	422	77.3%	95	17.4%	25	4.6%	5	0.7%
Physical Education	1,421	531	37.3%	653	45.9%	185	13.0%	53	3.7%
Science and Technology	1,362	453	33.3%	531	39.0%	225	16.5%	153	11.2%
Social Studies	1,849	625	33.8%	783	42.3%	294	15.9%	147	8.0%
Special Education	2,201	357	16.2%	1,423	64.7%	341	15.5%	80	3.6%
Total ACAs	**21,067**	**7,756**	**36.8%**	**9,120**	**43.3%**	**3,063**	**14.5%**	**1,129**	**5.4%**
Total Individuals	**13,594**	**7,756**	**57.1%**	**4,560**	**33.5%**	**1,021**	**7.5%**	**257**	**1.9%**
Average ACAs Per Individual	**1.6**	**1.0**		**2.0**		**3.0**		**4.4**	

Source: Professional Teaching Standards Board Files.

only in special education (16.2%). The largest percentage endorsed in four or more ACAs were those endorsed in mathematics (12.9%). Overall, this table indicates that a significant proportion (33.5%) of individuals can teach in at least two content areas allowing a district to employ teachers in varying content areas during a given school year.

To further explore the content area differences, wage and age analyses were conducted by content area and area of employment. **Table A-2** (see page A10) shows ACAs by state, industry, and employment area. Again, the content areas displayed in the table are not mutually exclusive as endorsements for the same individual can appear in the counts multiple times depending on which content areas they were endorsed to teach. **Figure A-3** displays the partner states used in the analysis for which R&P has a data sharing agreement (e.g., wage records). A total of 11,073 individuals who were endorsed to teach in Wyoming were working in the state (either in public schools or in other industries). A total of 752 individuals who were endorsed to teach in Wyoming were working in partner states while 1,769 individuals could not be found working in either Wyoming or a partner state based on wage records. These "not found in Wyoming or partner states" individuals could have been retired, in non-partner states, or out of the labor market for other reasons (e.g., death, unemployment, self-employed, etc.). One individual was removed from the analysis as their annual wage was more than three standard deviations above the mean (an outlier). The total percentage of individuals endorsed to teach by employment area (i.e., Wyoming or partner state and industry) is also shown graphically in **Figure A-4** (see page A11).

Figure A-3: Wyoming and States with which Research & Planning Has a Data-Sharing Agreement (*Partner States*)



Within Wyoming, the vast majority (71.2%) were working in public schools while a total of 1,396

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Table A-2: **Total Number of Individuals in Wyoming by Industry and Assigned Content Area (ACA), 2010/11**

Table 2a

	Wyoming					Partner States			Not Found*	Total
ACA	Public Schools, Ed. Services (611100)	Goods-Producing	Service Providing	Government (except Public Schools)	Subtotal	Public Schools, Ed. Services (611100)	Other Industries	Subtotal	Subtotal	Total
Business	278		41	9	328	18	8	26	40	394
Career/Technical	283		31	10	324	13		13	37	374
Elementary Ed.	5,061	28	592	91	5,772	276	70	346	947	7,065
Foreign Language	309		32		341	26		26	67	434
Language Arts	1,313	6	148	22	1,489	87	28	115	272	1,876
Fine Arts	413	7	48		468	23	6	29	78	575
Mathematics	735	7	82	11	835	48	16	64	122	1,021
Middle School	1,508	16	127	23	1,674	38	13	51	199	1,924
Music	399		53	9	461	27	13	40	45	546
Physical Education	1,064	9	89	22	1,184	57	25	82	155	1,421
Science and Tech.	921	17	114	23	1,075	58	29	87	201	1,363
Social Studies	1,250	9	155	27	1,441	70	29	99	309	1,849
Special Education	1,642		140	44	1,826	83	21	104	266	2,196
Total ACAs	**15,176**	**112**	**1,652**	**301**	**17,241**	**824**	**264**	**1,088**	**2,738**	**21,067**
Total Individuals	**9,677**	**76**	**1,116**	**204**	**11,073**	**568**	**184**	**752**	**1,769**	**13,594**

Table A-2b: Average Wage

	Wyoming					Partner States			Not Found*	Total
ACA	Public Schools, Ed. Services (611100)	Goods-Producing	Service Providing	Government (except Public Schools)	Subtotal	Public Schools, Ed. Services (611100)	Other Industries	Subtotal	Subtotal	Total
Business	$59,864		$44,198	$52,079		$44,135	$34,042		N/A	
Career/Technical	$62,289		$43,905	$60,874		$41,183			N/A	
Elementary Ed.	$54,872	$31,811	$30,081	$45,920		$38,377	$20,317		N/A	
Foreign Language	$57,490		$27,556			$42,036			N/A	
Language Arts	$57,119	$20,900	$27,698	$52,357		$38,307	$25,616		N/A	
Fine Arts	$55,550	$24,639	$30,185			$37,861	$22,463		N/A	
Mathematics	$58,175	$34,509	$34,207	$41,106		$39,671	$49,791		N/A	
Middle School	$62,412	$53,049	$38,689	$54,687		$50,127	$38,536		N/A	
Music	$55,658		$23,204	$34,247		$32,478	$16,830		N/A	
Physical Education	$60,192	$32,860	$38,138	$39,013		$42,672	$21,184		N/A	
Science and Tech.	$59,497	$56,539	$36,019	$45,028		$40,711	$27,942		N/A	
Social Studies	$58,823	$61,069	$33,843	$59,532		$43,422	$30,685		N/A	
Special Education	$59,250		$36,082	$61,622		$41,923	$25,621		N/A	
Total	**$56,646**	**$41,104**	**$30,675**	**$46,609**		**$35,910**	**$26,739**		**N/A**	

Table A-2c: Average Age

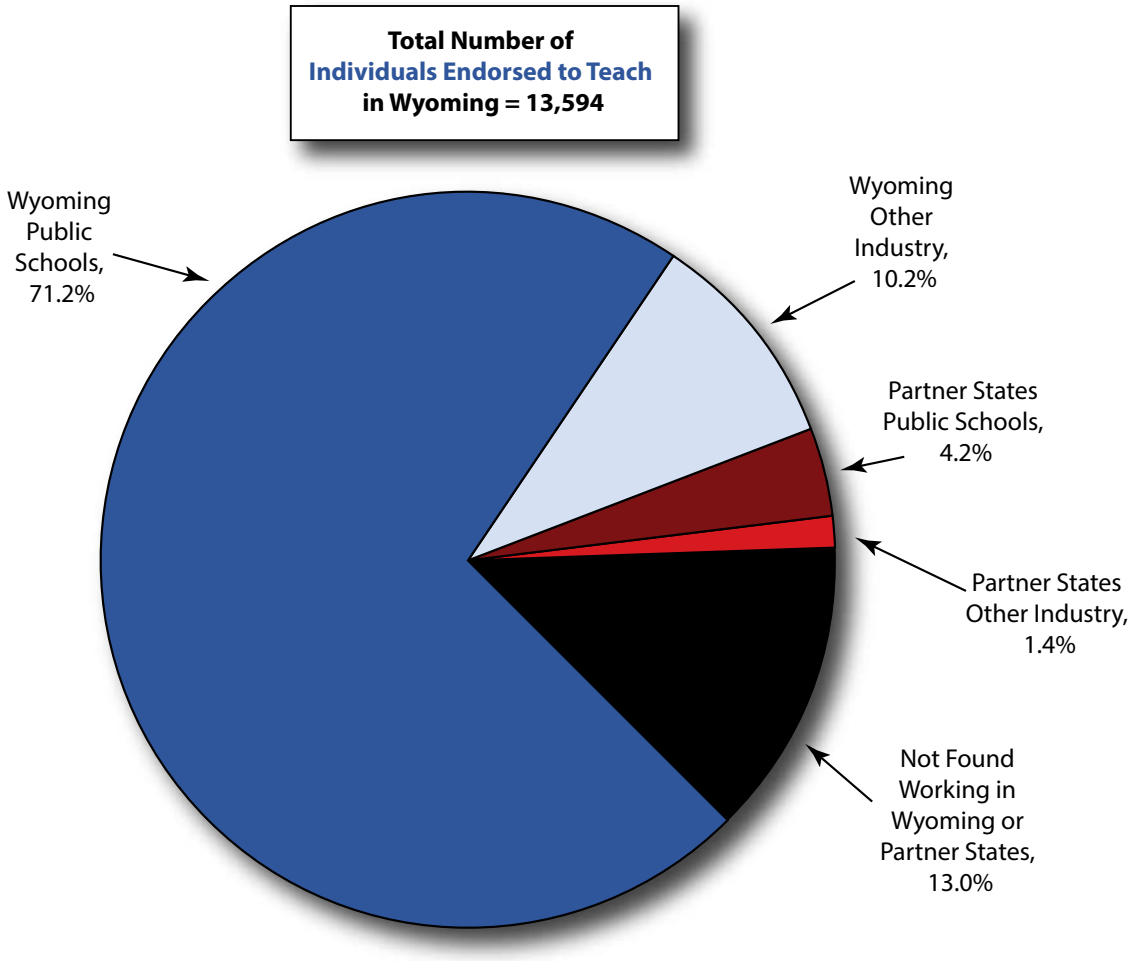
	Wyoming					Partner States			Not Found*	Total
ACA	Public Schools, Ed. Services (611100)	Goods-Producing	Service Providing	Government (except Public Schools)	Subtotal	Public Schools, Ed. Services (611100)	Other Industries	Subtotal	Subtotal	Total
Business	48.7		52.2	54.3		44.4	54.0		56.7	
Career/Technical	50.0		52.9	45.1		46.0			57.4	
Elementary Ed.	44.6	39.7	43.0	47.1		40.7	40.5		48.5	
Foreign Language	44.5		47.1			44.8			51.2	
Language Arts	46.2	35.2	46.1	49.8		41.5	45.4		51.6	
Fine Arts	47.0	46.4	49.1			43.0	46.9		51.0	
Mathematics	43.4	40.1	44.3	45.7		37.4	42.1		47.0	
Middle School	47.9	49.2	48.5	49.9		48.6	55.8		52.6	
Music	45.5		44.9	53.0		36.9	40.3		45.3	
Physical Ed.	45.8	38.4	47.6	48.9		41.3	44.4		50.3	
Science and Tech.	45.0	45.3	44.5	51.6		38.7	39.1		48.7	
Social Studies	46.8	40.1	47.5	47.3		41.7	48.9		54.5	
Special Education	46.1		47.4	48.6		43.7	44.3		52.5	
Total	**44.7**	**40.3**	**44.1**	**47.0**		**40.3**	**42.0**		**49.2**	

Blank cells indicate data suppression due to confidentiality (a count of less than 5)
* Not found in Wyoming or partner states.
Source: Professional Teaching Standards Board Files.

(Text continued from page A9)

(10.3%) were working in other industries. Of those endorsed to teach elementary education, 5,061 were working in Wyoming public schools while 592 were working in the private service providing sectors. The total number working in public schools in partner states was relatively small (568); however, these ACAs constitute a significant portion of the potential labor pool of teachers in Wyoming. As seen in **Table A-2c**, these individuals were, on average, younger than any other segment of endorsed individuals analyzed (with the exception of those working in goods producing industries in Wyoming). Also, as seen in Table A-2b, these individuals had lower annual wages across all content areas and industries. This result may indicate that individuals who receive a Wyoming teaching license but cannot find a teaching job within the state may decide to work out of state for a lower wage until they are able to find a job in Wyoming public schools.

Figure A-4: Total Number of Individuals Endorsed to Teach in Wyoming and Where They Worked, 2010/11

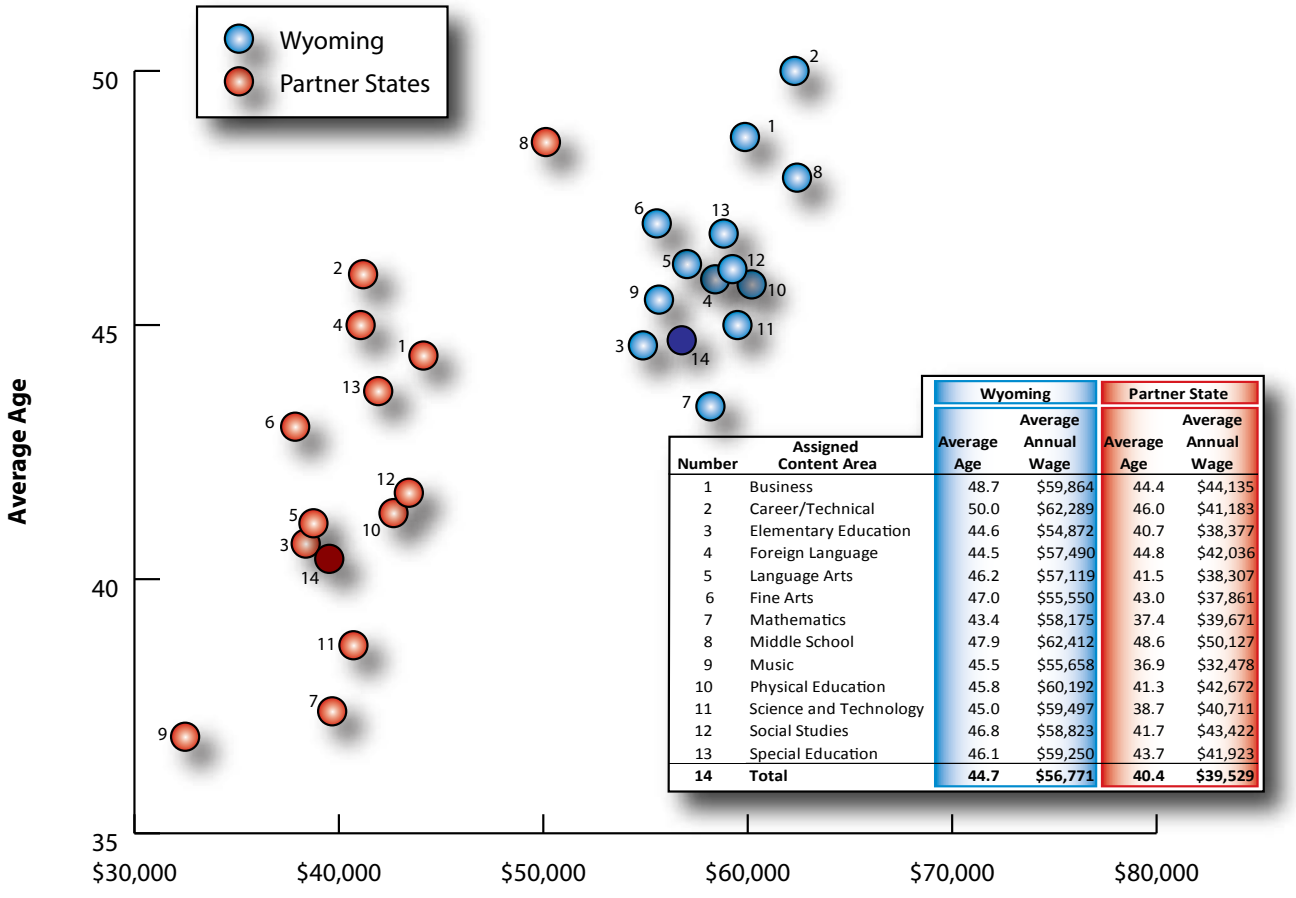


Sources:
Professional Teaching Standards Board Files.
Unemployment Insurance (UI) Wage Records.

Figure A-5 further illustrates this point by plotting average annual wage and average age for those working in public schools in Wyoming and partner states. Two clusters emerge from this data. Those individuals working in Wyoming public schools were both older and earning higher annual wages on average than those working in partner states. It is clear that age plays a significant role in average annual wage by content area. For example, those endorsed in music who were working in partner states were significantly younger (36.9) and earning less annually ($32,478) compared to those working in Wyoming (45.5 and $55,658, respectively). Of those endorsed in music, 45 were working in partner states during the 2010/11 school year and constituted a potential labor pool for music teachers for Wyoming school districts.

The average age of individuals endorsed but could not be found in either Wyoming

Figure A-5: Average Age and Average Annual Wage of Individuals Who are Endorsed in Wyoming and Working in Public Schools in Wyoming, or Endorsed in Wyoming and Working in Partner States, 2010/11



Number	Assigned Content Area	Wyoming Average Age	Wyoming Average Annual Wage	Partner State Average Age	Partner State Average Annual Wage
1	Business	48.7	$59,864	44.4	$44,135
2	Career/Technical	50.0	$62,289	46.0	$41,183
3	Elementary Education	44.6	$54,872	40.7	$38,377
4	Foreign Language	44.5	$57,490	44.8	$42,036
5	Language Arts	46.2	$57,119	41.5	$38,307
6	Fine Arts	47.0	$55,550	43.0	$37,861
7	Mathematics	43.4	$58,175	37.4	$39,671
8	Middle School	47.9	$62,412	48.6	$50,127
9	Music	45.5	$55,658	36.9	$32,478
10	Physical Education	45.8	$60,192	41.3	$42,672
11	Science and Technology	45.0	$59,497	38.7	$40,711
12	Social Studies	46.8	$58,823	41.7	$43,422
13	Special Education	46.1	$59,250	43.7	$41,923
14	**Total**	**44.7**	**$56,771**	**40.4**	**$39,529**

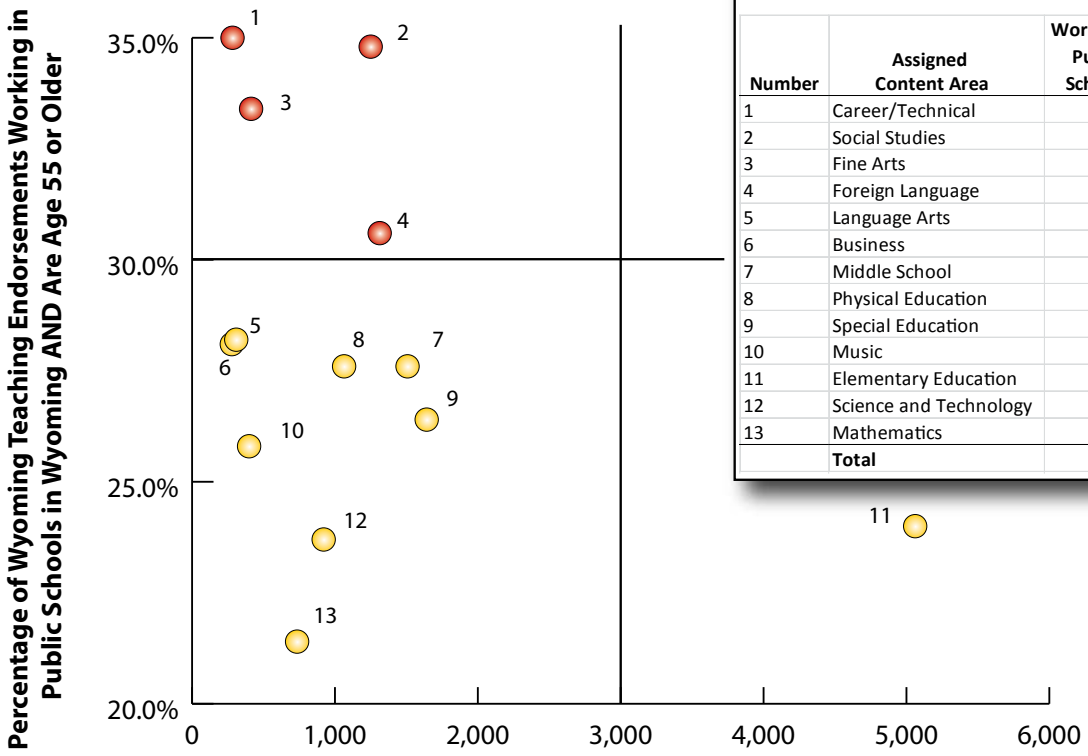
Partner states are those with which Research & Planning has data-sharing agreements: AK, CO, ID, MT, NE, NM, OK, SD, TX, and UT.

Sources:
Professional Teaching Standards Board Files.
Unemployment Insurance (UI) Wage Records.

or partner states is of particular note (see Table A-2c). In all content areas, the average age was higher than all other employment areas indicating that a majority of these individuals were likely retired with little intention of entering the recruitment pool. One reason the number of unknown ACAs is high may be due to recent retirements and the need for these teachers to renew their licenses in order to finish their final year. A teacher may need to renew his or her license to continue to teach for one year but because the license is valid for five to 10 years, the remaining four to nine years would not be utilized.

Endorsed individuals who teach in Wyoming public schools also differ in terms of age and content area. The data presented in **Figure A-6** show the count and percentage of those working in Wyoming public schools that are 55 and older. We found that four ACAs have over 30% of teachers over the age of 55: career/technical, social studies, fine arts, and language arts. Those endorsed in mathematics and science and technology were the youngest. Elementary education is a clear outlier. With a large number of ACAs (5,061) and only 24.0% being over the age of 55, this population could

Figure A-6: Number Working in Wyoming Public Schools, and Percentage of those Endorsed Age 55 and Older by Assigned Content Area (ACA), 2010/11



Number	Assigned Content Area	Working in Public Schools	% 55 and Older
1	Career/Technical	283	35.0
2	Social Studies	1,250	34.8
3	Fine Arts	413	33.4
4	Foreign Language	309	30.6
5	Language Arts	1.313	28.2
6	Business	278	28.1
7	Middle School	1,508	27.6
8	Physical Education	1,064	27.6
9	Special Education	1,642	26.4
10	Music	399	25.8
11	Elementary Education	5,061	24.0
12	Science and Technology	921	23.7
13	Mathematics	735	21.4
	Total	**15,176**	**27.0**

Sources:
Professional Teaching Standards Board Files.
Unemployment Insurance (UI) Wage Records.

serve as a large labor pool for districts as those endorsed in other content areas continue to age. Elementary education teachers who do not have another endorsement would need to pursue further endorsements to be included in this labor pool.

Table A-3 displays data from within Wyoming for those working in public schools and those working in other industries. Overall, 77.9% of those endorsed in social studies were working in the state followed closely by foreign language (78.4%), and science and technology (78.9%). Due to the low percentages in these content areas working in the school districts, the recruitment pool is larger compared to those content areas where a significant proportion is already working in the district (e.g., middle school with 87.0%). Districts can look to other pockets of labor to recruit teachers outside the school system.

In terms of comparing those working in Wyoming, a significant proportion of those endorsed in middle school (90.1%) were working in public schools compared to only 9.9% working in other industries. Those endorsed in business (84.2%), science and technology (85.7%), and career/technical (86.3%) had the lowest percentage working in public schools. This result indicates two points. First, individuals endorsed in these content areas may have more incentive (e.g., higher wages, more career mobility) to work in other industries which means they may not consider teaching a viable option. Second, those endorsed in business, science and technology, and career/technical content areas have a larger labor pool already endorsed and working (outside public schools) which districts can attempt to recruit.

Teacher Labor Pool & Multi-Endorsement

In light of the aging teachers in Wyoming, the need for replacements is evident. An issue for school districts within the next 10 years will be effective recruitment of teachers in specific content area. As stated in Chapter 4, the number of education graduates in the region saw a percentage increase of 1.9% from 2011 to 2012. Wyoming saw an increase of about 20.9% but the number was small with just 50 graduates. In light of

Table A-3: **Total Number of Endorsements of Persons Licensed to Teach in Wyoming Who Are Working in Public Schools or Other Industry in Wyoming, 2010/11**

		Endorsements of Persons Working in Wyoming					
	Total ACAs	Working in Public Schools in Wyoming		Working in Other Industry in Wyoming		Total Working in Wyoming	
Assigned Content Area (ACA)	N	N	Row %	N	Row %	N	Row %
01 Business	396	278	70.2%	52	13.1%	330	83.3%
02 Career/Technical	381	283	74.3%	45	11.8%	328	86.1%
03 Elementary Ed.	7,065	5,061	71.6%	711	10.1%	5,772	81.7%
04 Foreign Language	445	309	69.4%	40	9.0%	349	78.4%
05 Language Arts	1,876	1,313	70.0%	176	9.4%	1,489	79.4%
06 Fine Arts	579	413	71.3%	59	10.2%	472	81.5%
07 Mathematics	1,021	735	72.0%	100	9.8%	835	81.8%
08 Middle School	1,924	1,508	78.4%	166	8.6%	1,674	87.0%
09 Music	547	399	72.9%	63	11.5%	462	84.5%
10 Physical Education	1,421	1,064	74.9%	121	8.5%	1,185	83.4%
11 Science and Tech	1,362	921	67.6%	154	11.3%	1,075	78.9%
12 Social Studies	1,849	1,250	67.6%	191	10.3%	1,441	77.9%
13 Special Education	2,201	1,642	74.6%	189	8.6%	1,831	83.2%
Total ACAs	**21,067**	**15,176**	**72.0%**	**2,067**	**9.8%**	**17,243**	**81.8%**
Total Individuals	**13,594**	**9,677**	**71.2%**	**1,397**	**10.3%**	**11,074**	**81.5%**
Average ACA Per Individual	**1.6**	**1.6**		**1.5**		**1.6**	

this small numerical growth, the number of already endorsed teachers not currently working in Wyoming public schools is a potential replacement pool. Further, not only do districts have the option of recruiting teachers from recent graduates and other labor markets, but districts may have teachers already working for them that could fill the most pressing recruitment needs.

Teachers are often endorsed in several different content areas and grade levels allowing them to teach a wide range of subjects. As school districts post jobs for particular content areas and grade levels, an individual who is endorsed in many areas might be a more attractive prospect as they can teach multiple content areas at differing grade levels.

At the middle and secondary levels, teachers are often very specialized in what content areas they teach (e.g., students will go to specific classrooms to be taught a specific subject such as math or political science) as opposed to the self-contained classroom setting in an elementary school. To illustrate this point, **Table A-4** (see page A16) displays several matrices of teachers who were endorsed to teach in Wyoming by content area only. Grade level was not included as it added to the complexity of the analysis and was outside the scope of this chapter. The numbers displayed will not sum to the total due to confidential data suppression. Any cell with fewer than five (5) ACAs was suppressed. As seen in **Table A-4a (see page A16)**, a total of 328 of those endorsed in career/technical were also endorsed in other content areas. Since the cells are not mutually exclusive, these counts of endorsements cannot be considered individuals, but a count of ACAs.

Elementary education had a total of 4,307 ACAs able to teach in middle and secondary school content areas. In contrast, only a small number of those endorsed in music were endorsed to teach other content areas (a total of 158). For example, only six endorsed in music were also endorsed in science and technology.

Table A-4b (see page A16) displays the number of ACAs licensed in Wyoming, but could not be located in either Wyoming or partner states. Many cells were suppressed in this table due to data confidentiality. Among those not found in Wyoming or partner states, a total of 107 of those endorsed in elementary education could also teach language arts. A total of only 14 music ACAs could teach in other content areas. **Table A-4c** (see page A16) shows the percentage by ACAs of those who are neither in Wyoming's or partner state's labor force and the overall number of ACAs. Overall, 15.3% of those endorsed in elementary education and language arts were not found using current R&P data. This percentage represents a potential labor pool from which districts could utilize both content areas if needed. In total, 16.7% of those endorsed in social studies were unable to be found using current R&P data. This finding is expected as social studies teachers who were unable to be found were among the oldest with an average age of 54.5 (see **Table A-2d, page A10**). This illustrates that a significant proportion of teachers endorsed in social studies may have been retired and had no intention of returning to the labor force full time.

Due to elementary education having a significant proportion able to teach in other content areas (4,307), a separate

(Text continued on page A17)

Table A-4: **Total Number of Multiple Assigned Content Areas (ACAs) in Wyoming and Number of ACAs Not Found Working in Wyoming or Partner States, 2010/11**

Table 4a: Total ACAs

Endorsement: Content Area of Endorsement	Total	01 Business	02 Career/ Technical	03 Elementary Ed.	04 Foreign Language	05 Language Arts	06 Fine Arts	07 Mathematics	08 Middle School	09 Music	10 Physical Education	11 Science and Tech.	12 Social Studies	13 Special Education
01 Business	396	-	57	41	8	24		40	64		53	23	28	13
02 Career/Technical	381	57	-	27		7	9	17	79		33	42	35	18
03 Elementary Ed.	7,065	41	27	-	62	701	108	194	943	61	153	221	367	1,429
04 Foreign Language	445	8		62	-	121	11	21	78	7	30	20	60	19
05 Language Arts	1,876	24	7	701	121	-	125	125	331	19	70	133	309	180
06 Fine Arts	579		9	108	11	125	-	9	66			19	35	31
07 Mathematics	1,021	40	17	194	21	125	9	-	217	7	95	309	121	34
08 Middle School	1,924	64	79	943	78	331	66	217	-	24	174	282	354	212
09 Music	547			61		19		7	24	-		6	11	12
10 Physical Ed.	1,421	53	33	153	30	70	13	95	174		-	243	186	147
11 Science and Tech.	1,363	23	42	221	20	133	19	309	282	6	243	-	173	60
12 Social Studies	1,849	28	35	367	60	309	35	121	354	11	186	173	-	224
13 Special Ed.	2,200	13	18	1,429	19	180	31	34	212	12	147	60	224	-
Total ACAs	**21,067**	**358**	**328**	**4,307**	**439**	**2,145**	**435**	**1,189**	**2,824**	**158**	**1,200**	**1,531**	**1,903**	**2,379**
Total Individuals	**13,594**													

Table A-4b: Not Found Working in Wyoming or Partner States

Endorsement: Content Area of Endorsement	Total	01 Business	02 Career/ Technical	03 Elementary Ed.	04 Foreign Language	05 Language Arts	06 Fine Arts	07 Mathematics	08 Middle School	09 Music	10 Physical Education	11 Science and Tech.	12 Social Studies	13 Special Education
01 Business	40	-						5	8		5			
02 Career/Technical	37		-									9	5	5
03 Elementary Ed.	947	5		-	6	107	18	25	90	7	15	37	76	175
04 Foreign Language	67			6	-	18			11			2	16	
05 Language Arts	272			107	18	-	16	14	47		7	17	52	30
06 Fine Arts	78			18		16	-		9			5	8	10
07 Mathematics	122	5		25		14		-	21		10	40	14	
08 Middle School	199	8	6	90	11	47	9	21	-		19	33	45	22
09 Music	45			7						-				
10 Physical Ed.	155	5		15		7		10	19		-	41	22	7
11 Science and Tech.	201		9	37		17	5	40	33		41	-	26	11
12 Social Studies	309		5	76	16	52	8	14	45		22	26	-	40
13 Special Ed.	266		5	175		30	10		22		7	11	40	-
Total ACAs	**2,738**	**35**	**40**	**564**	**64**	**314**	**69**	**137**	**312**	**14**	**133**	**224**	**309**	**303**

Table A-4c: Percentage of Total ACAs Not Found Working in Wyoming or Partner States

Endorsement: Content Area of Endorsement	Total	01 Business	02 Career/ Technical	03 Elementary Ed.	04 Foreign Language	05 Language Arts	06 Fine Arts	07 Mathematics	08 Middle School	09 Music	10 Physical Education	11 Science and Tech.	12 Social Studies	13 Special Education
01 Business	10.1%	-						12.5%	12.5%		9.4%			
02 Career/Technical	9.7%		-									21.4%	14.3%	27.8%
03 Elementary Ed.	13.4%	12.2%		-	9.7%	15.3%	16.7%	12.9%	9.5%	11.5%	9.8%	16.7%	20.7%	12.2%
04 Foreign Language	15.1%			9.7%	-	14.9%			14.1%			10.0%	26.7%	
05 Language Arts	14.5%			15.3%	14.9%	-	12.8%	11.2%	14.2%		10.0%	12.8%	16.8%	16.7%
06 Fine Arts	13.5%			16.7%		12.8%	-		13.6%			26.3%	22.9%	32.3%
07 Mathematics	11.9%	12.5%		12.9%		11.2%		-	9.7%		10.5%	12.9%	11.6%	
08 Middle School	10.3%	12.5%	7.6%	9.5%	14.1%	14.2%	13.6%	9.7%	-		10.9%	11.7%	12.7%	10.4%
09 Music	8.2%			11.5%						-				
10 Physical Education	10.9%	9.4%		9.8%		10.0%		10.5%	10.9%		-	16.9%	11.8%	4.8%
11 Science and Tech.	14.7%		21.4%	16.7%		12.8%	26.3%	12.9%	11.7%		16.9%	-	15.0%	18.3%
12 Social Studies	16.7%		14.3%	20.7%	26.7%	16.8%	22.9%	11.6%	12.7%		11.8%	15.0%	-	17.9%
13 Special Education	12.1%		27.8%	12.2%		16.7%	32.3%		10.4%		4.8%	18.3%	17.9%	-
Total ACAs	**13.0%**	**9.8%**	**12.2%**	**13.1%**	**14.6%**	**14.6%**	**15.9%**	**11.5%**	**11.0%**	**8.9%**	**11.1%**	**14.6%**	**16.2%**	**12.7%**

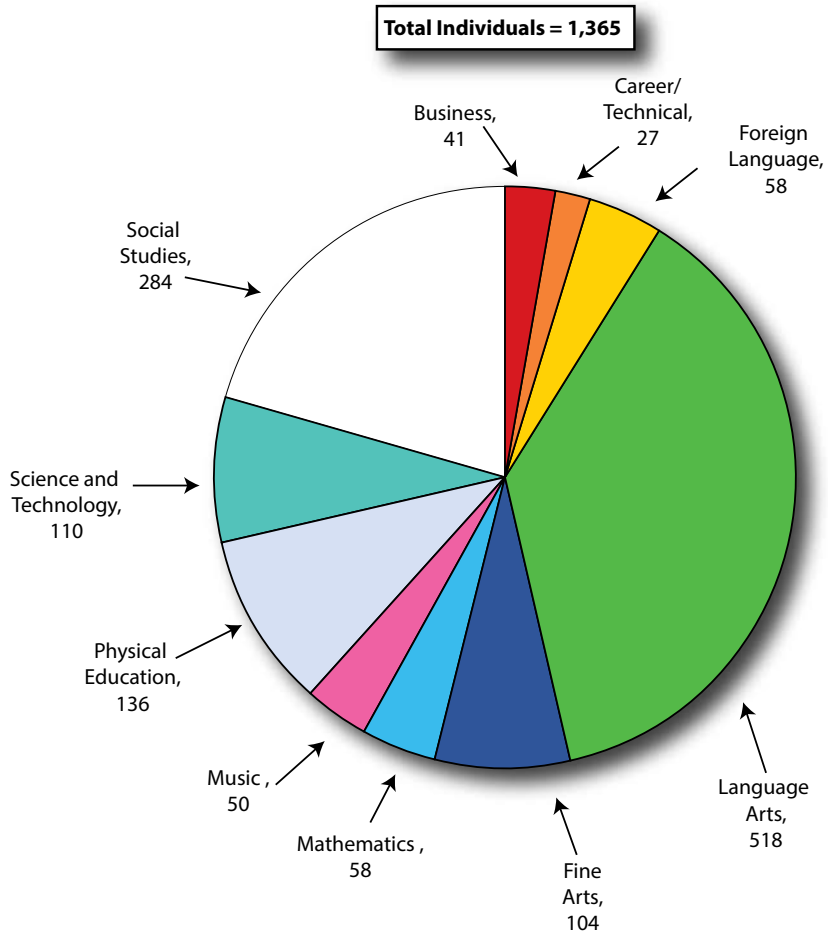
Blank cells indicate data suppression due to confidentiality (a count of less than 5)

Source: Professional Teaching Standards Board Files.

(Text continued from page A15)

analysis was conducted. Teachers who were able to teach elementary education and another subject at the middle and high school grade levels were compared. As seen in **Figure A-7**, a total of 1,365 individuals endorsed in elementary education were also endorsed at the middle and high school grade levels (6-12). The largest group was language arts (518) followed by social studies (284). As previously discussed, with the large percentage of social studies teachers (see Figure A-6) nearing retirement age, districts could look within their own labor pool (e.g., people already employed by the district) for teachers who are currently teaching elementary education but who are also endorsed to teach social studies (a labor pool of 284, as shown in Figure A-7). However, it should be noted that the teacher's own preference in which content area they teach must be considered.

Figure A-7: Teachers Endorsed in Elementary Education with Another Assigned Content Area (ACA), 2010/11



County, Content Area, and Replacement Need

The previous section covered statewide employment and demographic information for teachers licensed and endorsed to teach in Wyoming public schools in the 2010/11 school year. A reasonable assumption is that districts across Wyoming will differ in the recruitment needs by content area. If counties that share borders also share the same recruitment need for a specific content area then inter-district competitiveness may increase both for those already licensed and new graduates. Most school districts in Wyoming fall within county borders with some exceptions. For example, Big Horn County currently has four districts within its borders with one district covering a small portion of Park County. However, Natrona County School District aligns with Natrona County's borders.

Reference Table 3 (see page A32) displays a full, detailed listing of all ACAs with the highest average age for each county in Wyoming, in descending

order. Four counties had more than 30% of individual teachers over the age of 55: Platte (36.0), Hot Springs (32.9), Crook (31.7), and Fremont (30.2). Three counties had less than 20% of individuals endorsed to teach over the age of 55: Teton (18.9), Sublette (17.8), and Johnson (16.6).

In terms of recruitment needs by individual districts within counties, there are clear trends across counties. Career/technical appears in the top three for 17 of the 23 counties (74.0%) and business appears in the top three for 12 of the 23 counties (52.2%). The total number in these content areas was relatively small; however, districts will need to recruit for these positions as these individuals begin to retire. The inter-district competition among these content areas may become increasingly more evident as districts try to hire.

People who change employment from a district in one county to a district in another county constitute a labor pool from within the state which is readily available due to already being licensed, endorsed, and working in the state. **Table A-5** shows the demographics of individuals by content area who switched employment from one district in the 2008/09 school year to another in 2010/11. The average age is the age of the individual at the start of the 2010/11 school year. A total of 204 individuals changed employment from one district to another with an average age of 41.5. The highest wage increases were for those endorsed in business ($12,947), science and technology ($11,595), and career/technical ($7,585). Five content areas decreased in wages: foreign language, fine arts, mathematics, middle school, and physical education after changing school districts.

A total of 168 (82.3%) of the 204 individuals were 54 years of age and younger indicating that younger individuals were more likely to change districts than older individuals. Women in elementary education (84.4%), special

Table A-5: **Demographics for those Employed in Public Schools in Wyoming Who Changed School Districts from 2008/09 to 2010/11 School Year**

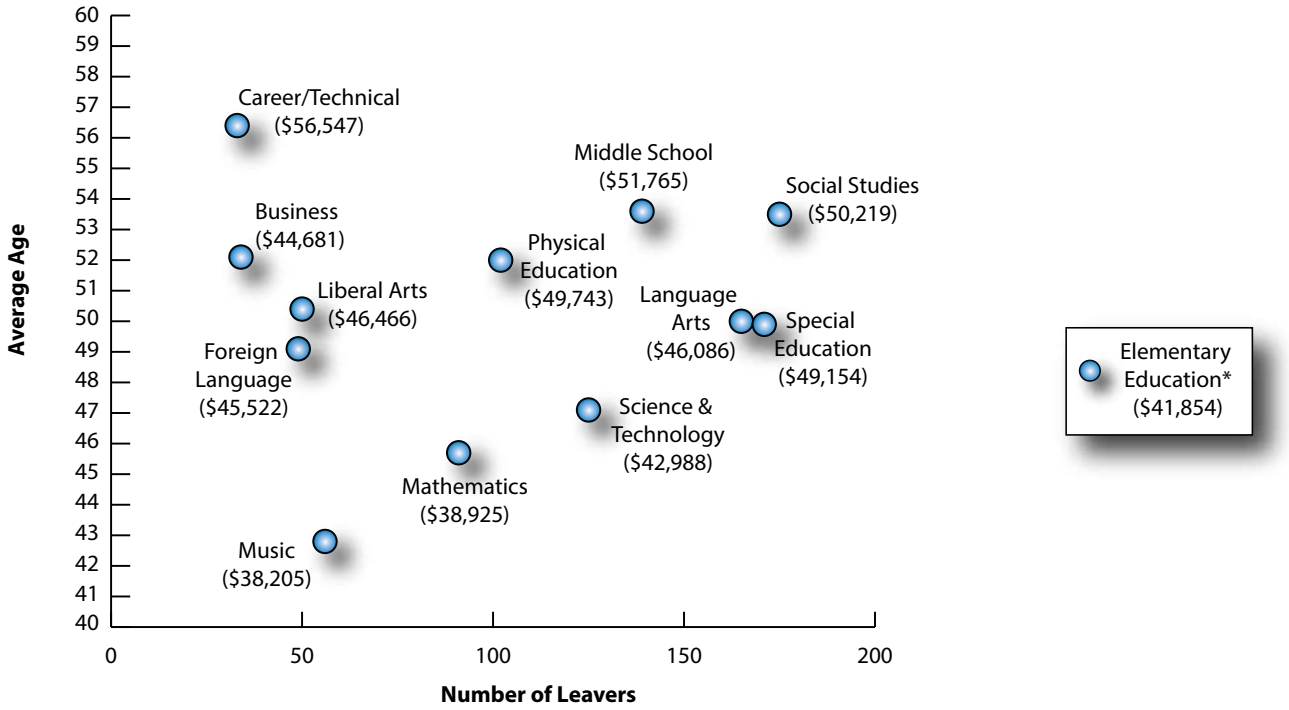
		Age in 2010-11			Gender		Average Annual Wage			
Assigned Content Area (ACA)	Total	Average Age	55 and Older	54 and Younger	Males	Females	2008-09	2010-11	N Change	% Change
Business	6	37.1					$57,490	$70,437	$12,947	22.5%
Career/Technical	7	47.8					$52,545	$60,131	$7,585	14.4%
Elementary Ed.	96	41.7	16	80	14	81	$41,846	$45,110	$3,263	7.8%
Foreign Language	6	44.7					$38,827	$35,797	-$3,030	-7.8%
Language Arts	23	39.4			6	17	$49,771	$54,425	$4,653	9.3%
Fine Arts	13	44.6	5	8			$39,106	$36,360	-$2,746	-7.0%
Mathematics	22	49.9	8	14	10	12	$56,219	$53,044	-$3,175	-5.6%
Middle School	31	49.1	9	22	13	18	$56,521	$53,044	-$3,477	-6.2%
Music	9	37.7					$51,949	$52,420	$471	0.9%
Physical Education	26	40.1			13	13	$50,643	$45,792	-$4,851	-9.6%
Science and Tech.	28	42.7	5	23	12	16	$40,344	$51,939	$11,595	28.7%
Social Studies	28	41.8	5	23	17	11	$56,321	$57,962	$1,641	2.9%
Special Education	45	41.8	9	36	9	36	$48,363	$49,767	$1,404	2.9%
Total Endorsements	340	43.0	69	271	112	228	$49,227	$51,248	$2,022	4.1%
Total Individuals	204	41.5	36	168	68	135	$47,275	$49,358	$2,084	4.4%

Source: Professional Teaching Standards Board Files.

education (80.0%), and language arts (73.9%) were more likely to change districts than their male counterparts. Social studies was the only content area where males were more likely to change districts than females (39.3%). Overall, 135 females (66.2%) changed districts from 2008/09 to 2010/11. This result could simply be the effect of more women in this particular sample than a result associated with gender effects of migration. This will be discussed in more detail in the discussion section.

As older individuals in Wyoming public schools begin to retire and districts attempt to fill vacant positions, not only will individuals who are willing to change employment from district to district become important but also those who leave Wyoming public schools (leavers). People leave jobs for many reasons (e.g., retirement, better wages, better location, career advancement). The content area an individual is able to teach becomes increasingly more important to school districts as the labor supply of teachers in a particular area dwindles. As seen in **Figure A-8**, content areas differ when age and total number of leavers were considered. Those endorsed in music (56) who worked in Wyoming public schools in 2008/09 but left in 2010/11 were younger (42.8) than any other content area and also had the lowest average annual wage ($38,205). Comparatively, those endorsed in social studies (175) were significantly older (53.5) and had a higher average annual wage ($50,219) when they left Wyoming public schools. Elementary

Figure A-8: Total Number Employed in Wyoming Public Schools in 2008-09, Who Did Not Appear in Public Schools in 2010-11 (*Leavers*) by Assigned Content Area (ACA)



* Elementary Education (368 leavers, 47.2 average age) is not plotted in this graphic.
Source: Professional Teaching Standards Board Files.

education was a clear outlier and shown on the graph in its own space. A total of 520 elementary education ACAs left Wyoming public schools with an average age of 48.8. These results indicate that if individuals teaching in content areas with a lower wage and who are younger may seek jobs in other industries in the state or outside the state (e.g., music). However, as individuals age, they leave with high wages and are likely entering retirement (e.g., social studies).

Discussion

Overview of Findings

This chapter examined the PTSB licensing data for teachers endorsed to teach in Wyoming for the 2010/11 school year. The goals of this chapter were to identify potential labor pools of endorsed individuals districts can recruit from and further identify specific content areas where the recruitment need is higher. As student enrollment continues to increase, the findings in this chapter may assist districts in locating specific human labor pools of teachers in Wyoming.

The number of teachers who are able to teach multiple content areas is significant. This content area diversity adds to the potential labor pool for which districts can recruit for specific content areas. However, it was also found that the total number is tied with the specific content area. Those endorsed in elementary education were also endorsed in a large number of other content areas. This finding indicates that districts can use their elementary education teachers who are endorsed in other content areas for the most pressing recruitment needs.

The present research also focused on the age and wages of endorsed teachers by state and industry. Several pockets of available teachers were found. Those employed in partner states both in public schools and other industries is one labor pool for districts to recruit. Individuals in partner states were found to be, on average, younger and had a lower annual wage compared to those working in Wyoming public schools. As previously mentioned, this may be due to recent graduates who were unable to obtain teaching positions in Wyoming and turned to partner states for employment. However, it is unknown whether individuals in partner states would be willing to relocate or commute which makes this group volatile in terms of recruitment costs for districts.

Those endorsed and working in other industries in Wyoming serve as potential labor pools within the state. The reason for their employment in other industries was not analyzed here as it was out of the scope of the available data. Those that are not working in Wyoming or partner states are another pocket of labor available to school districts. This “unknown” group is relatively large; however, the average age is significantly above any other segment of endorsed individuals analyzed which may indicate that a large proportion may be retired.

Individual counties were found to have both similarities and differences. Nearly all counties included business and career/technical content areas as areas with the greatest percentage over the age of 55. This result suggests that as teachers from these content areas begin to retire, inter-county competition for

labor may increase. Certain counties were found to have, on average, older endorsed individuals than others. Districts within Platte, Hot Springs, Crook, and Fremont had over 30% of endorsed individuals over the age of 55 while districts within Teton, Sublette, and Johnson counties had less than 20%. As these individuals begin to retire, districts will see differing recruitment costs associated with filling vacancies based on content area.

The range of average annual wages was relatively homogenous across content areas for those working in Wyoming public schools. This finding supported Ballou and Podgursky (2001) that suggest there is a strong attitude among teachers for not being compensated differently depending upon the content area one teaches. The main contributor to higher annual wages was age. It should not be assumed, however, that each particular class subject costs districts the same amount of their budget. Roza (2009) analyzed three school districts across differing areas of the United States and found that districts paid more per-pupil for electives and noncore courses (e.g., foreign language) than core courses (e.g., math, science, and English). The author suggests that class size is a significant contributor to per-pupil cost as elective and noncore courses tend to have smaller class sizes than core courses while teacher compensation does not differ based on subject taught.

A separate analysis found that approximately 200 individuals changed districts from the 2008/09 school year to the 2010/11 school year. Individuals who are more likely to change employment from district to district could also potentially give districts the necessary recruitment pool for filling vacancies. It should be noted that even though an individual changed employment between districts, it does not necessarily mean that they changed residence. People who change districts and choose to commute would also be included in this count.

Endorsement Classification

As part of this research, R&P created a classification system of teaching endorsements that allowed for effective labor market analysis of the teacher supply in Wyoming. R&P used this strategy in order for individuals that provide educational services (e.g., teachers, principals, counselors) and those who conduct educational research to have a common set of defined categories when researching labor supply. Across the nation, states vary significantly in how they both license and endorse individuals to teach within their borders. In order to make comparisons among national, regional, state, and county level analyses, R&P developed an efficient way to understand teacher supply.

The structure was developed using several guiding principles. Endorsements were grouped based on similarity on two variables: the subject taught in the classroom and nature of instruction. Each endorsement was evaluated for overall uniqueness based on subject and nature of instruction.

R&P classified endorsement areas into 42 Assigned Content Areas (ACAs) distinguishing between subject and nature of instruction in the following ways:

1. Elementary education teachers teach students in a self-contained classroom where multiple subjects are often taught (e.g., language arts, art, and music). However, teachers who are

endorsed in art K-6 can only teach art in those grades thus the two endorsements are distinguished both in terms of specific subject taught and nature of instruction.

2. Middle and high school grade levels are specialized in terms of what subject is taught in the classroom. For example, foreign language endorsements (e.g., French, Spanish) follow the same structure within the classroom such as grammar, speaking, and reading but differ in what subject matter is taught. Similarly, music is often taught by the same teacher and covers the concepts associated with music regardless of whether the focus is instrumental or vocal. Endorsements at the middle and high school grade levels were placed into specific ACAs based on similarity of subject matter or nature of instruction.

3. All special education endorsements were included in the same ACA due to both nature of instruction and subject being similar across specialty.

4. Mathematics was placed into its own distinct ACA due to the subject matter in each classroom being sufficiently narrow. For example, in a pre-algebra class, the focus remains on pre-algebra throughout the course of instruction while chemistry courses often cover a wide range of topics within the discipline of chemistry (e.g., organic and inorganic chemistry).

5. Administrative endorsements (e.g., Audiology, Counselors, and Principals) were grouped individually regardless of grade level. The specific function each person with these endorsements performs is sufficiently distinct to warrant separate groupings.

6. All endorsements that were no longer active with PTSB but were too general to place into specific categories were given their own ACA (e.g., Middle School).

The classification of endorsements into ACAs allowed R&P to conduct analyses in a clearer and more concise way that allows for commonality easier across labor markets. This classification system is not limited to the occupations found in school districts. This type of classification could be accomplished with other occupations for comparability across national, state, and county labor markets. For example, nurses are often licensed in a wide range of specialties (e.g., Oncology, Community, Psychiatric) which can complicate labor market supply analysis if similarity across specialties is not considered.

Future Research

Past research indicates that the effect of migration is varied and complex in terms of men and women's employment. Using data collected from individuals in professional and management positions regarding the factors in willingness to relocate, Baldridge, Eddleston, and Veiga (2006) found that married women were more likely to relocate if their husbands were the primary wage earner. The authors suggest that their results are in line with previous research that indicates gender roles are a significant factor in influencing women's attitudes regarding relocation (e.g., the husband's career is given priority and child care is part of a woman's responsibility). Cooke and Bailey (1996) tested the effects of migration on women using the Public Use Microdata Sample (PUMS) of the 1980 U.S. Census. Using a logit probability model which included employment after migration as

the dependent variable, the authors found a positive impact on women's employment after migration. The authors found that women who migrated had a 9% increase in their probability of employment compared to women who did not migrate.

Even though gender role theory and migration effects were not specifically tested in the current chapter, our results indicated that the majority of the individuals who changed districts tended to be younger, female and, on average, increased their average annual wage after they changed districts.

Future research is needed in order to examine the effects of family characteristics on migration of teachers within Wyoming and between partner states. Wyoming's economy is highly dependent upon natural resources (e.g., mining) which has within it an attitude that as jobs move, employees must move with them (Allan, 2011). As families increasingly have two wage earners, the effects of gender roles and the availability of a labor supply of teachers within a state is important. Further, future research should also include administrative staff (e.g., principals, school nurses) labor supply and the different wage ranges for public school employees compared to employees in other industries.

Another important avenue of future research is substitute teachers and the role they play in the labor supply to school districts. If a permanent teacher vacates his or her position and the district is unable to find a replacement, substitutes may be hired to cover classrooms. The PTSB data supplied to R&P included the substitute permit. However, many teachers must hold a substitute permit to complete student teaching and then gain a standard or professional license. Due to the large number of individuals with double licensure (either a standard or professional license, or a substitute permit), R&P did not conduct an analysis on substitute teachers. Wyoming Retirement Board files would allow R&P to effectively separate permanent and substitute teachers as substitute teachers do not contribute to the retirement fund. The practicality of using substitutes as a temporary means to fill vacated positions in districts would be examined in future research once reliable data is obtained. The supply of substitute teachers could play a major role in district staffing patterns as teacher retirement increases.

As mentioned in the introduction, the PTSB is a separate entity from the WDE. To understand the dynamics of both teacher supply and demand, a combination of both datasets is necessary in future research. As the boom generation of teachers begins to retire, the demands of the school district may change based on content area and grade level. The labor supply research using PTSB licensing data may assist districts in finding the best routes to recruit teachers effectively depending on the needs identified using WDE staffing patterns and recruitment needs.

The rate of teacher exits from school districts has been shown to be dependent upon age and years of experience (Strunk & Robinson, 2006). Younger and older teachers are more likely to leave employment due to other employment opportunities and retirement, respectively. School district characteristics such as level of funding (Boe, Cook, & Sunderland, 2008) and student performance (Clotfelter, Ladd, Vigdor, & Diaz, 2004), wages and benefits (Currall, Towler, Judge, &

Kohn, 2005), and college major (Grier & Johnston, 2008) have all been shown to influence whether a teacher intends to leave employment both outside and between school districts. R&P is capable of conducting longitudinal research on wage progression and the likelihood of teacher turnover for both younger and older teachers. With the supply of teachers by content area and grade level becoming increasingly important, understanding teacher turnover will be needed for government legislative bodies to ensure adequate funding for recruitment.

Limitations and Recommendations

Several important limitations in the current chapter should be noted. First, the quality of teaching in the classroom was not a focus of the current research due to lack of empirical data. No data were provided to R&P that would specifically address overall quality of classroom instruction. The Wyoming Community College Commission and the University of Wyoming are providing R&P with student data which may help address this issue. The data from the Wyoming college system were unavailable at the time this chapter was published. Data on student achievement and outcomes can provide insight into both school and district performance.

Second, the college in which a teacher graduates may not be the college in which they completed their teacher preparation. The PTSB data included the college where an individual completed their degree, but did not specify where they earned their teacher preparation. Due to this data limitation, no degree level analysis was conducted.

Third, the No Child Left Behind Act (2001) was implemented to address quality among teachers and more accountability among school districts. Endorsements were both created and deactivated with the PTSB continuing to renew inactive endorsements for those who already had the endorsement on their license. Due to the variability in the application requirements a teacher needed to complete to become endorsed, content area analysis may be biased as not all teachers were endorsed in the same fashion.

Several methodologies could be implemented to address these concerns. Developing a survey instrument designed to assess past migration and intent to migrate along with work/family compromise would be an effective strategy to understand labor availability. Also included in the instrument would be specific questions regarding content area(s) taught, endorsement procedures required, and current (and future) plans for retirement. Further, for those endorsed to teach but are working in other industries, specific questions could be developed to understand the reasons for their employment outside of public schools. This level of data collection and analysis would provide a deeper understanding of current teacher trends in Wyoming public schools.

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Reference Table 1: **Professional Teaching Standards Board (PTSB) Endorsements included in Chapter Analyses and Research & Planning (R&P) Assigned Content Area (ACA), 2010/11**

Endorsement Active	PTSB Endorsement	ACA
No	Business (Excluding Shorthand) 6-12	Business
No	Business (Excluding Typing & Shorthand) 6-12	
No	Business (Excluding Typing) 6-12	
Yes	Business Education 6-12	
No	Marketing 6-12	
No	Auto Body 6-12	Career/Technical
No	Auto Mechanics 6-12	
No	Aviation 6-12	
No	Building Trades 6-12	
No	Certified Nursing Assistant Instructor 6-12	
Yes	Cooperative Vocational Education 6-12	
No	Distributive Education 6-12	
No	Electronics 6-12	
No	Graphics 6-12	
No	Health Occupations 6-12	
No	Industrial Arts 6-12	
No	Law Enforcement 6-12	
No	Macintosh Service Repair 6-12	
No	Motorcycle Education 6-12	
No	Outdoor Living 6-12	
Yes	PIC- Agriculture, Food & Natural Resources	
Yes	PIC- Architecture & Construction	
Yes	PIC- Arts, A/V Technology & Communications	
Yes	PIC- Business, Management, & Administration	
Yes	PIC- Education & Training	
Yes	PIC- Finance	
Yes	PIC- Health Science	
Yes	PIC- Hospitality & Tourism	
Yes	PIC- Information Technology	
Yes	PIC- Law, Public Safety, Corrections & Security	
Yes	PIC- Marketing, Sales & Services	
Yes	PIC- Science, Technology, Engineering & Mathematics	
No	Radio/TV/Media Technology 6-12	
No	Technical National Guard 6-12	
No	Trade & Industrial (Auto Mechanics) 6-12	
No	Trade & Industrial (Building Trades) 6-12	
No	Trade & Industrial (Drafting) 6-12	
No	Trade & Industrial (Electrical) 6-12	
No	Trade & Industrial (Electronics) 6-12	
No	Trade & Industrial (Graphics) 6-12	
No	Trade & Industrial (Machine Shop) 6-12	
No	Trade & Industrial (Mechanics) 6-12	
No	Trade & Industrial (Welding) 6-12	
No	Trade & Industrial (Woodworking) 6-12	
No	Trade & Industrial Education 6-12	
No	Trade & Industrial Health Occupations 6-12	
No	Trade and Technical 6-12	
No	Trade and Technical Careers 6-12	
No	Trade and Technical Military Careers 6-12	
No	Trade Chef 6-12	
No	Trade-Computer Technology 6-12	
No	Trade-Horticulture 6-12	
No	Trade-Sports Medicine 6-12	
No	Welding 6-12	
Yes	Elementary Education K-6	Elementary Education

(Table continued on page A27)

(Table continued from page A26)

Reference Table 1: **Professional Teaching Standards Board (PTSB) Endorsements included in Chapter Analyses and Research & Planning (R&P) Assigned Content Area (ACA), 2010/11**

Endorsement Active	PTSB Endorsement	ACA
No	Bilingual K-12	Foreign Language
Yes	French 6-12	
Yes	French K-12	
Yes	German 6-12	
Yes	Italian 6-12	
Yes	Japanese 6-12	
Yes	Latin 6-12	
Yes	Native Language - Arapahoe K-12	
Yes	Native Language - Shoshoni K-12	
Yes	Russian 6-12	
Yes	Spanish 5-8	
Yes	Spanish 6-12	
Yes	Spanish K-12	
Yes	Spanish K-6	
Yes	American Indian Children K-12	Language Arts
Yes	English 6-12	
Yes	Journalism 6-12	
No	Junior High English & Social Studies 5-8	
Yes	Language Arts 5-8	
Yes	Reading 5-8	
Yes	Reading 6-12	
Yes	Reading K-12	
Yes	Reading K-6	
No	Reading Specialist K-12	
No	Remedial Reading K-12	
Yes	Speech 6-12	
Yes	Art 5-8	Fine Arts
Yes	Art 6-12	
Yes	Art K-12	
Yes	Art K-6	
Yes	Drama 6-12	
No	Photography 6-12	
No	Junior High Mathematics & Science 5-8	Mathematics
Yes	Mathematics 5-8	
Yes	Mathematics 6-12	
No	Middle School 5-8	Middle School
Yes	Music 5-8	Music
Yes	Music 6-12	
Yes	Music Instrumental 5-8	
Yes	Music Instrumental 6-12	
Yes	Music Instrumental K-12	
Yes	Music K-12	
Yes	Music K-6	
Yes	Music Vocal 5-8	
Yes	Music Vocal 6-12	
Yes	Music Vocal K-12	
Yes	Music Vocal K-6	
Yes	Musical Instrumental K-6	

(Table continued on page A28)

(Table continued from page A27)

Reference Table 1: **Professional Teaching Standards Board (PTSB) Endorsements included in Chapter Analyses and Research & Planning (R&P) Assigned Content Area (ACA), 2010/11**

Endorsement Active	PTSB Endorsement	ACA
Yes	Health 5-8	Physical Education
Yes	Health 6-12	
Yes	Health K-12	
Yes	Physical Education 5-8	
Yes	Physical Education 6-12	
Yes	Physical Education K-12	
Yes	Physical Education K-6	
Yes	Agriculture 6-12	Science and Technology
No	Audiovisual K-12	
Yes	Biology 6-12	
Yes	Chemistry 6-12	
No	Computer Industry Certification 6-12	
Yes	Computer Science Education 6-12	
Yes	Earth Science 6-12	
No	General Science 6-12	
Yes	Instructional Technology 5-8*	
Yes	Instructional Technology 6-12*	
Yes	Instructional Technology K-12*	
Yes	Instructional Technology K-6*	
Yes	Physical Science 6-12	
Yes	Physics 6-12	
Yes	Science 5-8	
No	Science Comprehensive 6-12	
Yes	Anthropology 6-12	Social Studies
Yes	Economics 6-12	
Yes	Family and Consumer Science 6-12	
No	Food Services 6-12	
No	General Social Studies 6-12	
Yes	Geography 6-12	
No	Government and Public Admin 6-12	
Yes	History 6-12	
Yes	Political Science 6-12	
Yes	Psychology 6-12	
Yes	Social Studies 5-8	
No	Social Studies Comprehensive 6-12	
Yes	Sociology 6-12	
No	United States History 6-12	
No	World History 6-12	
Yes	Adaptive Physical Education 5-8	Special Education
Yes	Adaptive Physical Education 6-12	
Yes	Adaptive Physical Education K-12	
Yes	Exceptional Generalist 5-8	
Yes	Exceptional Generalist 6-12	
Yes	Exceptional Generalist K-12	
Yes	Exceptional Generalist K-6	
Yes	Exceptional Specialist -AH K-12	
Yes	Exceptional Specialist -AH K-6	
Yes	Exceptional Specialist -BEH K-12	
Yes	Exceptional Specialist -BM 6-12	
Yes	Exceptional Specialist -BM K-12	
Yes	Exceptional Specialist -BM K-6	
Yes	Exceptional Specialist -Deaf 5-8	
Yes	Exceptional Specialist -Deaf K-12	
Yes	Exceptional Specialist -Deaf K-6	
Yes	Exceptional Specialist -ED 5-8	
Yes	Exceptional Specialist -ED K-12	
Yes	Exceptional Specialist -ED K-6	

(Table continued on page A29)

* Instructional Technology includes individuals who instruct teachers on how to use technology in the classroom but also can teach computer applications to students.

(Table continued from page A28)

Reference Table 1: **Professional Teaching Standards Board (PTSB) Endorsements included in Chapter Analyses and Research & Planning (R&P) Assigned Content Area (ACA), 2010/11**

Endorsement Active	PTSB Endorsement	ACA
Yes	Exceptional Specialist -LD 5-8	Special Education (continued)
Yes	Exceptional Specialist -LD 6-12	
Yes	Exceptional Specialist -LD K-12	
Yes	Exceptional Specialist -LD K-6	
Yes	Exceptional Specialist -MR 5-8	
Yes	Exceptional Specialist -MR 6-12	
Yes	Exceptional Specialist -MR K-12	
Yes	Exceptional Specialist -MR K-6	
Yes	Exceptional Specialist -PH 6-12	
Yes	Exceptional Specialist -PH K-12	
Yes	Exceptional Specialist -PH K-6	
Yes	Exceptional Specialist -VH K-12	

Reference Table 2: **Professional Teaching Standards Board (PTSB) Endorsements Excluded from Analyses and Research & Planning (R&P) Assigned Content Area (ACA), 2010/11**

Endorsement Active	PTSB Endorsement	ACA
Yes	Alternative, Non-Traditional, At-Risk 6-12	Alternative, Non-Traditional, At-Risk
No	Athletic Trainer	Athletic Trainer
No	Audiology K-12	Audiology
No	Assistant Coaching - All Sports	Coaches and Scouts
Yes	Assistant Coaching Baseball	
Yes	Assistant Coaching Basketball	
Yes	Assistant Coaching Football	
Yes	Assistant Coaching Golf	
Yes	Assistant Coaching Gymnastics	
Yes	Assistant Coaching Skiing	
Yes	Assistant Coaching Soccer	
Yes	Assistant Coaching Swimming	
Yes	Assistant Coaching Tennis	
Yes	Assistant Coaching Track	
Yes	Assistant Coaching Volleyball	
Yes	Assistant Coaching Wrestling	
Yes	Coaching Baseball	
Yes	Coaching Basketball	
Yes	Coaching Football	
Yes	Coaching Golf	
Yes	Coaching Gymnastics	
Yes	Coaching Skiing	
Yes	Coaching Soccer	
Yes	Coaching Swimming	
Yes	Coaching Tennis	
Yes	Coaching Track	
Yes	Coaching Volleyball	
Yes	Coaching Wrestling	

(Table continued on page A30)

(Table continued from page A29)

Reference Table 2: **Professional Teaching Standards Board (PTSB) Endorsements Excluded from Analyses and Research & Planning (R&P) Assigned Content Area (ACA), 2010/11**

Endorsement Active	PTSB Endorsement	ACA
Yes	Counselor 5-8	Counselor
Yes	Counselor 6-12	
Yes	Counselor K-12	
Yes	Counselor K-6	
Yes	Director 6-12	Director
Yes	Director K-12	
Yes	Director K-6	
Yes	Driver Education	Driver Education
Yes	Early Childhood Birth - Age 8 (or 3rd grade)	Early Childhood Birth - Age 8 (or 3rd grade)
Yes	Early Childhood Education K-3	Early Childhood Education K-3
Yes	Early Childhood Special Education Birth to 5 years	Early Childhood Special Education Birth to 5 years
Yes	Educational Diagnostician K-12	Education Diagnostician
Yes	English As A Second Language 5-8	ESL
Yes	English As A Second Language 6-12	
Yes	English As A Second Language K-12	
Yes	English As A Second Language K-6	
No	General Education K-6	General Education
Yes	Gifted and Talented K-6	Gifted and Talented
No	Head Teacher K-12	Head Teacher
No	Institutional School	Institutional School

(Table continued on page A31)

(Table continued from page A30)

Reference Table 2: **Professional Teaching Standards Board (PTSB) Endorsements Excluded from Analyses and Research & Planning (R&P) Assigned Content Area (ACA), 2010/11**

Endorsement Active	PTSB Endorsement	ACA
No	Institutional School Director	Institutional School Director
Yes	Institutional School Teacher	
Yes	Library Media K-12	Library Media
Yes	Preschool (Early Childhood) Birth - 5	Preschool (Early Childhood) Birth - 5
Yes	Intern Principal	Principal
Yes	Principal 5-8	
Yes	Principal 6-12	
Yes	Principal K-12	
Yes	Principal K-6	
No	Psychological Technician K-12	Psychological Technician
Yes	School Nurse K-12	School Nurse
Yes	Intern School Psychologist	School Psychologist
Yes	School Psychologist K-12	
Yes	School Social Worker K-12	School Social Worker
Yes	Educational Sign Language Interpreter 6-12	Sign Language Interpreter
Yes	Educational Sign Language Interpreter K-12	
Yes	Speech Pathologist K-12	Speech Pathologist
Yes	Superintendent K-12	Superintendent

Reference Table 3: **Number, Average Age, and Percentage of Assigned Content Areas (ACAs) Over the Age of 55 Working in Public School Districts by County and Content Area, 2010/11**

				Age 55 and Older	
County	Content Area	N	Average Age	N	%
Albany	Business	7	58.9		
	Career/Technical	13	51.4		
	Language Arts	71	50.0	29	40.8%
	Fine Arts	22	48.9	9	40.9%
	Foreign Language	17	48.8	8	47.1%
	Middle School	36	48.1	7	19.4%
	Social Studies	61	48.0	24	39.3%
	Science and Technology	38	47.7	11	28.9%
	Mathematics	34	47.0	11	32.4%
	Physical Education	41	46.7	10	24.4%
	Elementary Education	248	42.9	55	22.2%
	Special Education	83	42.8	18	21.7%
	Music	22	41.4		
	Total ACAs	693		195	28.1
	Total Individuals	464	43.9	111	23.9
Big Horn	Career/Technical	13	53.1	8	61.5%
	Fine Arts	11	52.6		
	Middle School	73	49.9	28	38.4%
	Social Studies	48	49.2	18	37.5%
	Business	12	48.9		
	Physical Education	31	47.4	12	38.7%
	Special Education	36	46.9	13	36.1%
	Language Arts	45	46.9	15	33.3%
	Elementary Education	143	45.3	34	23.8%
	Music	13	44.1		
	Science and Technology	35	44.0	8	22.9%
	Mathematics	27	43.3	7	25.9%
	Foreign Language	10	43.1		
	Total ACAs	497		156	31.4
	Total Individuals	280	46.2	81	28.9
Campbell	Career/Technical	19	48.1	6	31.6%
	Social Studies	105	46.8	40	38.1%
	Middle School	70	45.9	18	25.7%
	Music	37	45.9	8	21.6%
	Business	26	45.3	6	23.1%
	Special Education	160	44.7	40	25.0%
	Foreign Language	19	44.5	7	36.8%
	Elementary Education	464	44.0	114	24.6%
	Physical Education	112	43.8	27	24.1%
	Fine Arts	36	43.5	11	30.6%
	Language Arts	117	42.5	24	20.5%
	Science and Technology	64	42.4	11	17.2%
	Mathematics	54	39.8	5	9.3%
	Total ACAs	1,283		317	24.7%
	Total Individuals	829	44.1	198	23.9%
Carbon	Career/Technical	5	52.7		
	Fine Arts	11	51.6		
	Middle School	49	51.5	21	42.9%
	Business	7	47.8		
	Physical Education	41	47.5	15	36.6%
	Science and Technology	29	47.0	11	37.9%
	Special Education	48	46.8	17	35.4%
	Elementary Education	155	46.1	47	30.3%
	Social Studies	34	45.6	10	29.4%
	Language Arts	44	45.6	13	29.5%
	Mathematics	25	44.8	5	20.0%
	Music	15	42.0	6	40.0%
	Foreign Language	13	39.3		
	Total ACAs	476		159	33.4
	Total Individuals	299	45.2	88	29.4

Blank cells indicate data suppression due to confidentiality (a count of less than 5).
Source: Professional Teaching Standards Board Files.

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(Table continued from page A32)

Reference Table 3: **Number, Average Age, and Percentage of Assigned Content Areas (ACAs) Over the Age of 55 Working in Public School Districts by County and Content Area, 2010/11**

				Age 55 and Older	
County	Content Area	N	Average Age	N	%
Converse	Fine Arts	8	48.8		
	Middle School	50	48.6	15	30.0%
	Business		48.2		
	Language Arts	35	47.9	13	37.1%
	Music	13	45.7	5	38.5%
	Physical Education	40	43.8	7	17.5%
	Elementary Education	143	43.5	34	23.8%
	Social Studies	34	42.9	7	20.6%
	Foreign Language		42.8		
	Career/Technical	8	42.7		
	Special Education	65	42.6	12	18.5%
	Science and Technology	25	41.9		
	Mathematics	18	36.5	0	0.0%
	Total ACAs	450		101	22.4%
	Total Individuals	279	43.2	58	20.8%
Crook	Fine Arts	9	50.6		
	Business		50.0		
	Music	8	48.4		
	Special Education	32	48.2	12	37.5%
	Career/Technical		47.9		
	Physical Education	21	47.1	6	28.6%
	Elementary Education	72	46.7	25	34.7%
	Middle School	5	46.6		
	Language Arts	29	45.9	10	34.5%
	Science and Technology	22	43.7		
	Social Studies	23	43.7	5	21.7%
	Mathematics	18	42.5	5	27.8%
	Foreign Language	6	39.9	0	0.0%
	Total ACAs	253		79	31.2%
	Total Individuals	142	46.8	45	31.7%
Fremont	Career/Technical	37	55.0	22	59.5%
	Business	17	52.9	8	47.1%
	Middle School	130	50.1	43	33.1%
	Physical Education	82	48.4	31	37.8%
	Special Education	133	48.2	45	33.8%
	Music	25	47.4	9	36.0%
	Elementary Education	395	47.4	126	31.9%
	Social Studies	107	46.9	42	39.3%
	Language Arts	100	46.6	36	36.0%
	Fine Arts	36	46.4	12	33.3%
	Science and Technology	87	46.3	24	27.6%
	Foreign Language	23	46.1	9	39.1%
	Mathematics	56	44.7	13	23.2%
	Total ACAs	1,228		420	34.2%
	Total Individuals	761	46.6	230	30.2%
Goshen	Fine Arts	10	51.0	5	50.0%
	Career/Technical	11	49.6		
	Business	9	49.4		
	Middle School	40	48.0	11	27.5%
	Physical Education	28	46.6	7	25.0%
	Social Studies	34	46.5	11	32.4%
	Language Arts	30	45.5	7	23.3%
	Music	11	45.0		
	Special Education	35	44.8	9	25.7%
	Elementary Education	97	44.7	23	23.7%
	Mathematics	20	43.5		
	Science and Technology	23	42.7		
	Foreign Language	5	40.1		
	Total ACAs	353		88	24.9
	Total Individuals	226	45.0	55	24.3

Blank cells indicate data suppression due to confidentiality (a count of less than 5).
Source: Professional Teaching Standards Board Files.

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(Table continued from page A33)

Reference Table 3: **Number, Average Age, and Percentage of Assigned Content Areas (ACAs) Over the Age of 55 Working in Public School Districts by County and Content Area, 2010/11**

				Age 55 and Older	
County	Content Area	N	Average Age	N	%
Hot Springs	Business		58.6		
	Special Education	11	53.2	6	54.5%
	Career/Technical		52.2		
	Physical Education	13	51.1	7	53.8%
	Middle School	22	50.1	8	36.4%
	Mathematics	7	46.7		
	Fine Arts		46.6		
	Elementary Education	47	46.3	15	31.9%
	Science and Technology	11	46.1	5	45.5%
	Music		45.3		
	Social Studies	17	43.8	6	35.3%
	Language Arts	12	41.3		
	Foreign Language		31.0		
	Total ACAs	157		59	37.6
	Total Individuals	85	45.2	28	32.9
Johnson	Career/Technical		50.1		
	Special Education	30	49.1	8	26.7%
	Business	10	48.4		
	Physical Education	20	47.6	6	30.0%
	Middle School	32	46.8	6	18.8%
	Fine Arts	7	45.9		
	Foreign Language		45.2		
	Music	8	45.2		
	Elementary Education	79	43.2	12	15.2%
	Science and Technology	20	43.1		
	Mathematics	15	42.8		
	Language Arts	23	42.3		
	Social Studies	17	41.1		
	Total ACAs	271		51	18.8
	Total Individuals	163	43.5	27	16.6
Laramie	Career/Technical	43	51.0	14	32.6%
	Business	43	48.5	11	25.6%
	Special Education	219	47.5	63	28.8%
	Social Studies	191	46.7	62	32.5%
	Music	68	46.3	16	23.5%
	Foreign Language	47	45.9	14	29.8%
	Language Arts	173	45.9	51	29.5%
	Science and Technology	133	45.8	27	20.3%
	Physical Education	141	45.3	32	22.7%
	Elementary Education	734	44.5	161	21.9%
	Fine Arts	71	44.4	18	25.4%
	Middle School	126	44.1	20	15.9%
	Mathematics	112	43.9	24	21.4%
	Total ACAs	2,101		513	24.4
	Total Individuals	1,491	44.4	329	22.1%
Lincoln	Career/Technical	9	49.3		
	Fine Arts	12	49.1		
	Language Arts	43	48.3	13	30.2%
	Physical Education	31	47.5	11	35.5%
	Business	13	46.1		
	Middle School	41	46.1	11	26.8%
	Elementary Education	157	45.8	38	24.2%
	Social Studies	31	45.7	8	25.8%
	Mathematics	28	45.2	8	28.6%
	Science and Technology	27	43.9	7	25.9%
	Foreign Language	13	43.7		
	Music	16	42.8	5	31.3%
	Special Education	50	41.7	6	12.0%
	Total ACAs	471		115	24.4%
	Total Individuals	309	45.2	72	23.3%

Blank cells indicate data suppression due to confidentiality (a count of less than 5).
Source: Professional Teaching Standards Board Files.

(Table continued on page A35)

(Table continued from page A34)

Reference Table 3: **Number, Average Age, and Percentage of Assigned Content Areas (ACAs) Over the Age of 55 Working in Public School Districts by County and Content Area, 2010/11**

County	Content Area	N	Average Age	Age 55 and Older N	Age 55 and Older %
Natrona	Business	31	51.9	10	32.3%
	Foreign Language	35	49.0	13	37.1%
	Career/Technical	34	49.0	11	32.4%
	Language Arts	139	47.1	45	32.4%
	Middle School	258	47.0	61	23.6%
	Fine Arts	50	46.7	18	36.0%
	Special Education	199	46.0	43	21.6%
	Social Studies	142	46.0	44	31.0%
	Physical Education	110	45.4	22	20.0%
	Science and Technology	99	44.6	23	23.2%
	Music	43	44.1	8	18.6%
	Mathematics	85	43.2	18	21.2%
	Elementary Education	683	43.0	126	18.4%
	Total ACAs	1,908		442	23.2
	Total Individuals	1,216	43.7	247	20.3%
Niobrara	Career/Technical		57.2		
	Middle School	21	50.1	8	38.1%
	Science and Technology	7	48.8		
	Business	9	48.6		
	Language Arts	16	47.1	5	31.3%
	Social Studies	12	46.5		
	Elementary Education	36	46.0	9	25.0%
	Special Education	11	45.6		
	Mathematics	8	44.0		
	Physical Education	9	42.8		
	Music		42.4		
	Fine Arts		39.3		
	Foreign Language		24.7		
	Total ACAs	137		41	29.9
	Total Individuals	82	45.4	21	25.6
Park	Middle School	96	48.8	30	31.3%
	Social Studies	55	48.3	17	30.9%
	Music	14	47.8		
	Foreign Language	15	47.6	5	33.3%
	Special Education	75	47.6	19	25.3%
	Career/Technical	7	46.6	0	0.0%
	Mathematics	34	46.3	12	35.3%
	Elementary Education	253	45.9	65	25.7%
	Science and Technology	41	45.9	11	26.8%
	Language Arts	67	45.2	17	25.4%
	Physical Education	48	44.2	8	16.7%
	Business	11	43.9		
	Fine Arts	11	42.8		
	Total ACAs	727		190	26.1%
	Total Individuals	441	45.4	101	22.9
Platte	Fine Arts	6	57.5		
	Social Studies	34	53.3	20	58.8%
	Language Arts	25	52.3	12	48.0%
	Mathematics	14	50.5	6	42.9%
	Middle School	32	50.2	12	37.5%
	Music	7	49.8		
	Business	9	49.6		
	Foreign Language	7	48.7		
	Physical Education	28	48.7	13	46.4%
	Career/Technical	6	48.5		
	Elementary Education	86	48.5	29	33.7%
	Special Education	38	46.0	7	18.4%
	Science and Technology	18	45.7	5	27.8%
	Total ACAs	310		119	38.4%
	Total Individuals	186	48.6	67	36.0%

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Source: Professional Teaching Standards Board Files.

(Table continued on page A36)

(Table continued from page A35)

Reference Table 3: **Number, Average Age, and Percentage of Assigned Content Areas (ACAs) Over the Age of 55 Working in Public School Districts by County and Content Area, 2010/11**

				Age 55 and Older	
County	Content Area	N	Average Age	N	%
Sheridan	Career/Technical	11	50.6		
	Fine Arts	20	49.7	6	30.0%
	Science and Technology	57	48.6	20	35.1%
	Social Studies	62	48.4	23	37.1%
	Special Education	76	48.3	28	36.8%
	Language Arts	87	48.1	31	35.6%
	Middle School	102	47.9	28	27.5%
	Business	14	47.6		
	Physical Education	50	47.1	14	28.0%
	Elementary Education	258	44.9	65	25.2%
	Music	17	44.6		
	Mathematics	33	44.3	7	21.2%
	Foreign Language	16	44.2	5	31.3%
	Total ACAs	803		237	29.5%
	Total Individuals	488	45.5	127	26.0%
Sublette	Music	6	50.3		
	Middle School	34	46.7	6	17.6%
	Career/Technical	5	46.6		
	Fine Arts	9	45.8		
	Special Education	21	45.1		
	Elementary Education	86	44.3	18	20.9%
	Language Arts	22	44.0	5	22.7%
	Physical Education	22	43.7	6	27.3%
	Science and Technology	19	42.6		
	Social Studies	23	41.8		
	Mathematics	20	38.8		
	Business		36.2		
	Foreign Language		32.9		
	Total ACAs	275		52	18.9
	Total Individuals	169	43.2	30	17.8
Sweetwater	Career/Technical	16	50.2	7	43.8%
	Business	18	50.1		
	Social Studies	81	48.8	36	44.4%
	Middle School	91	48.0	24	26.4%
	Music	27	47.5	7	25.9%
	Language Arts	79	46.8	24	30.4%
	Special Education	132	46.7	35	26.5%
	Fine Arts	27	45.5	9	33.3%
	Science and Technology	56	44.5	12	21.4%
	Physical Education	71	44.5	21	29.6%
	Elementary Education	383	44.3	101	26.4%
	Foreign Language	18	43.9		
	Mathematics	39	42.2	6	15.4%
	Total ACAs	1,038		291	28.0%
	Total Individuals	682	44.9	188	27.6%
Teton	Business		51.5		
	Fine Arts	18	50.3	7	38.9%
	Middle School	45	47.3	11	24.4%
	Music	10	46.9		
	Social Studies	35	46.2	12	34.3%
	Career/Technical		45.6		
	Language Arts	41	45.3	12	29.3%
	Special Education	44	45.1	10	22.7%
	Mathematics	20	45.1		
	Physical Education	28	43.6	7	25.0%
	Elementary Education	161	42.2	27	16.8%
	Science and Technology	26	41.1		
	Foreign Language	19	40.7		
	Total ACAs	454		99	21.8
	Total Individuals	307	42.7	58	18.9

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Source: Professional Teaching Standards Board Files.

(Table continued on page A37)

(Table continued from page A36)

Reference Table 3: **Number, Average Age, and Percentage of Assigned Content Areas (ACAs) Over the Age of 55 Working in Public School Districts by County and Content Area, 2010/11**

				Age 55 and Older	
County	Content Area	N	Average Age	N	%
Uinta	Middle School	97	48.9	29	29.9%
	Business	6	48.8	0	0.0%
	Fine Arts	18	48.7	5	27.8%
	Social Studies	61	47.7	24	39.3%
	Science and Technology	45	47.1	15	33.3%
	Physical Education	46	46.4	12	26.1%
	Elementary Education	221	46.2	57	25.8%
	Special Education	80	45.8	21	26.3%
	Career/Technical	11	45.5		
	Language Arts	68	44.8	19	27.9%
	Music	22	44.5		
	Foreign Language	19	42.5		
	Mathematics	37	40.1	7	18.9%
	Total ACAs	731		197	26.9%
	Total Individuals	451	45.2	108	23.9%
Washakie	Social Studies	26	51.5	11	42.3%
	Career/Technical	5	50.0		
	Middle School	34	49.8	10	29.4%
	Business	12	49.3		
	Music	7	48.5		
	Physical Education	21	47.0	8	38.1%
	Mathematics	17	46.8	5	29.4%
	Science and Technology	19	46.6	6	31.6%
	Language Arts	25	46.6	7	28.0%
	Elementary Education	78	46.5	17	21.8%
	Fine Arts	6	46.3		
	Special Education	28	44.6	5	17.9%
	Foreign Language	6	38.6		
	Total ACAs	284		79	27.8
	Total Individuals	160	46.9	44	27.5
Weston	Foreign Language		52.1		
	Music		51.5		
	Career/Technical	7	48.2		
	Language Arts	15	47.7	7	46.7%
	Science and Technology	11	47.0		
	Physical Education	18	47.0	5	27.8%
	Social Studies	11	46.8		
	Middle School	19	46.4	5	26.3%
	Elementary Education	54	46.2	13	24.1%
	Fine Arts	5	45.1		
	Business	6	44.2		
	Special Education	20	44.0	5	25.0%
	Mathematics	10	42.8		
	Total ACAs	182		79	27.8
	Total Individuals	107	45.2	27	25.2

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Source: Professional Teaching Standards Board Files.

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