Higher Wages and More Work: Impact Evaluation of a State-Funded Incumbent Worker Training Program

by: Patrick Manning, Principal Economist

The Research & Planning (R&P) section of the Wyoming Department of Workforce Services has undertaken an impact evaluation of the Wyoming Workforce Development Training Fund (WDTF) as part of its Workforce Data Quality Initiative grant. For this research, R&P sought to answer these questions:

- Do WDTF participants earn higher wages after training than they would without training?
- Do trained workers remain in the workforce longer?

In the research presented in this article, *WDTF participants* refers to the group of individuals who received training or assistance through the Wyoming Workforce Development Training Fund. For example, there were 579 WDTF participants in second quarter 2007 (2007Q2). This group is referred to in this article as the *2007Q2*

WDTF training cohort; an analysis of each WDTF training cohort (a group of individuals who received WDTF training in a particular year and quarter) is available online at http://doe.state.wy.us/LMI/education_we_connect/WDTF_appendix.htm.

For this analysis, R&P created a *control group* of 24,677 individuals who did not receive WDTF training but had similar characteristics as WDTF participants, such as gender, age, quarters worked in the period prior to training, and quarterly mean wages in the period prior to training.

In the example presented in this article, WDTF participants received training in 2007Q2. The *base period* refers to the quarter of training (2007Q2) and the three previous quarters (2006Q3, 2006Q4, and 2007Q1).

HIGHLIGHTS

- **Employment and wages in Wyoming continued to decline from year-ago levels in 2015Q3. This is the first time that total wages, average monthly employment, and average weekly wage decreased from prior-year levels for consecutive quarters since the state's economic downturn of 2009Q1 to 2010Q1. ...** *page 21*

- **Over the year, the number of unique unemployment insurance claimants with continued claims increased by 1,312 workers (25.7%). ...** *page 39*

Unemployment Rate by Wyoming County, November 2015 (Not Seasonally Adjusted)

Northwest Region

Northeast Region

Sheridan

Big Horn

Sheridan

Sundance

Cody

Crook

Park

Basin

Buffalo

Gillette

Newcastle

Teton

Worland

Campbell

Weston

Washakie

Hot Springs

Jackson

Thermopolis

Natrona

Converse

Niobrara

Sublette

Casper

Douglas

Lusk

Pinedale

Lander

Fremont

Platte

Goshen

Lincoln

Wheatland

Torrington

Kemmerer

Sweetwater

Rawlins

Albany

Laramie

Uinta

Carbon

Green River

Laramie

Cheyenne

Evanston

Southwest Region

Central Region

Southeast Region

☐ 2.9% to 3.8%   ☐ 3.9% to 4.8%   ▨ 4.9% to 5.7%   ■ 5.8% to 6.7%

Unemployment Rate (Percentage)

IN THIS ISSUE

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Definitions

WDTF participants refers to the group of individuals who received training or assistance through the Wyoming Workforce Development Training Fund.

2007Q2 WDTF training cohort refers to 579 WDTF participants in second quarter 2007 (2007Q2).

Control group refers to individuals who did not receive WDTF training but had similar characteristics as WDTF participants, such as gender, age, quarters worked in the period prior to training, and quarterly mean wages in the period prior to training.

Base period refers to the quarter of training (2007Q2) and the three previous quarters (2006Q3, 2006Q4, and 2007Q1).

Post-training period refers to the 12 quarters after the WDTF participants received training; in this example, 2007Q3 to 2010Q2.

The *mean quarterly wage difference* for WDTF participants and the control group was calculated by subtracting the mean quarterly wage of the base period from the mean quarterly wage of the post-training period.

(Text continued from page 1)

Post-training period refers to the 12 quarters after the WDTF participants received training; in this example, 2007Q3 to 2010Q2.

The *mean quarterly wage difference* for WDTF participants and the control group was calculated by subtracting the mean quarterly wage of the base period from the mean quarterly wage of the post-training period. For example, the mean quarterly wage difference for 2007Q2 WDTF participants was $929[1] (a post-training period mean quarterly wage of $16,471 minus a base period mean quarterly wage of $15,542). By comparison, the mean quarterly wage difference for the control group (non-WDTF participants) was $17 (a post-training period mean quarterly wage of $15,243 minus a base period mean quarterly wage of $15,226).

In summary, the mean quarterly wage difference of WDTF participants from 2007Q2 ($929) was statistically significantly higher than the mean quarterly wage difference of the control group ($17). An analysis of each of the WDTF training cohorts from 2006Q3 to 2011Q4 indicated that WDTF participants from 15 of the 22 cohorts experienced a greater average quarterly wage increase from the base period to the post-training period than each control group from that particular year and quarter (see Table 5, page 18).

A more thorough discussion of the research, methodology, and results is presented later in this article.

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1   All wages are discussed in 2014 inflation-adjusted dollars.

The Workforce Innovation and Opportunity Act of 2014: Required Training Program Impact Evaluation

The key purposes of the Workforce Innovation and Opportunity Act (WIOA) are to "improve the quality and labor market relevance of workforce investment, education, and economic development efforts to provide America's workers with the skills and credentials necessary to secure and advance employment with family-sustaining wages and to provide America's employers with the skilled workers the employers need to succeed in a global economy" (H.R. 803, 2014). The only way to empirically determine whether or not programs funded by WIOA attain the goals that fall under these purposes is through experimental impact evaluation. Impact evaluation is denoted by its research design: the random assignment from the same population to a group who receive training and to another group who receive no services and who are subject to some measurement such as wage gain.

Sec. 116 of WIOA states:

"For the purpose of improving the management and effectiveness of programs and activities carried out under this title, the Secretary, through grants, contracts, or cooperative agreements, shall provide for the continuing evaluation of the programs and activities under this title, including those programs and activities carried out under this section."

Sec. 116 dictates that these types of independent evaluations must be carried out at least once every four years, and that, "evaluations conducted under this subsection shall utilize appropriate and rigorous methodology and research designs, including the use of control groups chosen by scientific random assignment methodologies."

However, training program managers are rarely willing to allow the random assignment of training applicants to training and non-training groups, necessitating research designs that approximate experimental design. This article demonstrates how program evaluation can be productively carried out using a State funded incumbent worker training program: Wyoming's Workforce Development Training Fund (WDTF).

For the WDTF program evaluation discussed in this article, a control group of individuals who did not receive WDTF assistance was matched to the WDTF participants for each period of the start of WDTF training. While this paper focuses specifically on the WDTF participants from second quarter 2007 (*2007Q2 WDTF training cohort*), the remaining 21 WDTF training cohorts for periods 2006Q3 to 2011Q4 are presented in the Appendix at http://doe.state.wy.us/LMI/education_we_connect/WDTF_appendix.htm.

The purpose of this article is to demonstrate how valid program impact evaluation can be carried out when random assignment to training and non-training groups from the same population is not possible. A benefit of this near-experimental design is that it is unobtrusive and does not disrupt the WIOA program environment. Conclusions about training outcomes from near-experimental designs have shortcomings. However, these limitations can be addressed in particular through research replication in other settings and for other similar programs. The net result is that even though the requirement of WIOA for random assignment is unlikely to occur in many states, the intent of the law, that rigorous scientific methods guide impact analysis, can be carried out in all states.

(Text continued from page 3)

Introduction

The Wyoming Workforce Development Training Fund (WDTF) is a state-funded program that provides new and existing businesses with funding for employee training in order to enhance overall workforce productivity and to promote economic growth in the State (Wyoming Department of Workforce Services, 2012).

The WDTF is comprised of three programs: grants for existing positions, grants for new positions, and new business recruitment (see Box, page 8). The WDTF database that was made available to R&P for the analysis discussed in this article contained information on the new and existing position applications from 2006Q2 to 2014Q2.

Table 1a displays the distribution of existing and new positions in the dataset analyzed. Business training grants can be used for a wide variety of training programs (see Table 1b) as long as the funding would not be provided by the business or organization as a routine cost of operation. The only

public sector organizations eligible for grants are county hospitals (see Table 1c). The industry is selected by the employer on the application based on a list of two-digit North American Industry Classification System (NAICS) industries

(see Table 1d, page 6). The training fund is used by a variety of industries with a heavy concentration in health care & social assistance; for example, 28.9% (4,055) of all WDTF training recipients from 2006Q2 to 2014Q2 were

Table 1a: Distribution of WDTF Participants by Grant Type, 2006Q2-2014Q2

Grant Type	N	%
Existing Position	12,756	90.9%
New Position	1,283	9.1%
Total	**14,039**	**100.0%**

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

Table 1c: Distribution of WDTF Participants by Business Type, 2006Q2-2014Q2

Business Type	N	%
County Hospitals	1,896	13.5%
Not For Profit	3,305	23.5%
Private	8,838	63.0%
Total	**14,039**	**100.0%**

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

Table 1b: Distribution of WDTF Participants by Training Type, 2006Q2-2014Q2

Type of Training	N	%
Conferences/Seminars	4,357	31.0%
Employee - Specific Technical Training	2,370	16.9%
Industry - Specific Technical Training	2,100	15.0%
New Equipment Training	111	0.8%
Technical - Agriculture	32	0.2%
Technical - Arts/Entertainment	13	0.1%
Technical - Construction	246	1.8%
Technical - Education	400	2.8%
Technical - Finance	163	1.2%
Technical - Health Care	1,438	10.2%
Technical - Information Management	360	2.6%
Technical - Lodging/Food	68	0.5%
Technical - Management/Leadership	1,067	7.6%
Technical - Manufacturing	363	2.6%
Technical - Mining/Extraction	353	2.5%
Technical - Real Estate	9	0.1%
Technical - Recreation	18	0.1%
Technical - Sales	163	1.2%
Technical - Scientific	49	0.3%
Technical - Transportation	31	0.2%
Technical - Utilities	233	1.7%
Trade Shows/Conventions	95	0.7%
Total	**14,039**	**100.0%**

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

classified as health care & social assistance worker.

The employer also selects the business size and the employee's position from a two-digit Standard Occupational Classification (SOC) occupation. Of all training participants in this analysis, 53.8% were employed by businesses with more than 100 employees (see Table 1e). The most frequently occuring occupations in this analysis were health care practitioners & technical occupations(16.2%), followed by management occupations (13.2%; see Table 1f, page 7).

One of the questions on the application for training grants for existing positions requests that an employer check all the following that apply (if any):

The skill upgrade provided by the training (i.e. program goal) will:

- Enhance employee wages
- Reduce turnover
- Enhance profitability
- Enhance employee effectiveness

See Table 1g (page 7) for

the distribution of employer responses to these four questions.

This analysis addresses the first two of these goals in relation to the overall Wyoming economy (not necessarily the employer-of-training). The fourth goal is indirectly addressed assuming achievement of the first two goals leads to enhanced employee effectiveness.

Prior Research of Workforce Development Programs

Until relatively recently, there was substantial sentiment that workforce development programs were ineffective for various reasons. For example, due to fragmentation of job training and regulatory restraints, former Assistant Secretary of Labor for Employment

Table 1d: Distribution of Wyoming Workforce Development Training Fund (WDTF) Participants by Industry, 2006Q2-2014Q2

NAICS[a] Code	WDTF Industry	N	%
11	Agriculture	95	0.7%
21	Mining	1,548	11.0%
22	Utilities	724	5.2%
23	Construction	855	6.1%
31-33	Manufacturing	1,043	7.4%
42	Wholesale Trade	76	0.5%
44-45	Retail Trade	443	3.2%
48-49	Transportation & Warehousing	178	1.3%
51	Information	140	1.0%
52	Finance & Insurance	809	5.8%
53	Real Estate & Rental & Leasing	19	0.1%
54	Professional & Technical Services	1,157	8.2%
55	Mgmt. Of Companies & Enterprises	7	0.0%
56	Admin. & Waste Services	7	0.0%
61	Educational Services	1,118	8.0%
62	Health Care & Social Assistance	4,055	28.9%
71	Arts, Entertainment, & Recreation	158	1.1%
72	Accommodation & Food Services	819	5.8%
81	Other Services (Except Public Admin.)	788	5.6%
	Total	**14,039**	**100.0%**

[a]North American Industry Classification System.
Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

Table 1e: Distribution of WDTF Participants by Business Size, 2006Q2-2014Q2

WDTF Business Size (Number of Employees)	N	%
1-5	843	6.0%
6-10	961	6.8%
11-25	1,707	12.2%
26-50	1,394	9.9%
51-100	1,580	11.3%
Over 100	7,554	53.8%
Total	**14,039**	**100.0%**

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

and Training Emily Stover DeRocco stated these

programs were "all process and no results" (McKinnon

Table1f: **Distribution of Wyoming Workforce Development Training Fund (WDTF) Participants by Occupation (2 Digit SOC Code), 2006Q2-2014Q2**

SOC[a] 2-Digit Code	Position (2-Digit SOC[a] Code)	N	%
11	Management	1,856	13.2%
13	Business & Financial Operations	917	6.5%
15	Computer & Mathematical	220	1.6%
17	Architecture & Engineering	668	4.8%
19	Life, Physical, & Social Science	111	0.8%
21	Community & Social Services	579	4.1%
23	Legal	22	0.2%
25	Education, Training, & Library	926	6.6%
27	Arts, Design, Entertainment, Sports, & Media	161	1.1%
29	Healthcare Practitioners & Technical	2,273	16.2%
31	Healthcare Support	909	6.5%
33	Protective Service	17	0.1%
35	Food Preparation & Serving Related	293	2.1%
37	Building & Grounds Cleaning & Maintenance	61	0.4%
39	Personal Care & Service	69	0.5%
41	Sales & Related	625	4.5%
43	Office & Administrative Support	846	6.0%
45	Farming, Fishing, & Forestry	29	0.2%
47	Construction & Extraction	1,343	9.6%
49	Installation, Maintenance, & Repair	996	7.1%
51	Production	961	6.8%
53	Transportation & Material Moving	79	0.6%
	None Specified	78	0.6%
	Total	**14,039**	**100.0%**

[a]Standard Occupational Classification.
Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

Table 1g: **Distribution of Wyoming Workforce Development Training Fund (WDTF) Participants (Existing Positions Only) by Purpose of Training, 2006Q2-2014Q2**

Purpose of Training	N and %	No	Yes	Total
Enhance Employee Wages	N	10,154	2,602	12,756
	%	79.6%	20.4%	100.0%
Reduce Turnover	N	5,667	7,089	12,756
	%	44.4%	55.6%	100.0%
Enhance Profitability	N	4,096	8,660	12,756
	%	32.1%	67.9%	100.0%
Enhance Employee Effectiveness	N	467	12,289	12,756
	%	3.7%	96.3%	100.0%

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

and Calmes, 2005). However, new techniques and information are becoming increasingly available for program implementation and evaluation. In regard to data resources, Jacobson and Lalonde (2013) argue "Through competitive grants such as the Department of Education's Statewide Longitudinal Data Systems (SLDS) Grant Program and the Department of Labor's Workforce Data Quality Initiative (WDQI), and through state initiatives, virtually every state is assembling databases necessary to evaluate its educational and training systems." Other researchers examine the targeting of workforce training initiatives to those that will receive the most benefit. For example, Heinrich (2013) concluded "Workforce development programs should target (or redirect) more resources for training to less advantaged individuals — i.e., those with lower education levels and limited work experience — who are least likely to receive training from a private employer. Employers have little incentive to offer more general, portable types of training that are more likely to generate external benefits, and firm-specific training is increasingly likely to be offered to only the most-

Box: Wyoming Workforce Development Training Fund Grant Programs

Grants for Existing Positions

Grants of up to $2,000 per program participant with a 40% business match are available.

- Definition of an Existing Position: Training will either correct an employee's skill deficiency or upgrade an employee's current skill level.

- There is a direct relationship to the trainee's occupation or craft.

- The training is not normally provided by the business.

- The business will not substitute funds normally provided for training or funds obtained from another source.

- There is a need for the skill upgrade provided by the training for the business to remain competitive in the industry or economy.

Grants for New Positions

Positions created in the last 180 days that led to a net increase in the number of employees. Grants of up to $4,000 per program participant are available. Grants for new positions were to assist Wyoming businesses in two ways:

- Wyoming Business Expansion. The Workforce Development Training Fund can help a growing Wyoming business by deferring much of the business's training cost during the expansion phase.

- New Business Recruitment. DWS partners with Wyoming's economic development entities to recruit businesses. The WDTF can help create a successful start-up by deferring much of the training costs.

Pre-Hiring Economic Development Grants

These are designed to train skilled workers in a particular industry. These are achieved through a partnership of four entities: a training entity, a business or group of businesses, an economic development entity, and the local Workforce Center. Pre-obligation grants set aside funding for large expansion or relocation projects. Pre-Hire Economic Development Grants are processed manually and are not discussed in this analysis.

Reference

Wyoming Department of Workforce Services. (2015). Workforce Development Training Fund Business Training Grants. Retrieved February 1, 2016, from http://wyomingworkforce.org/businesses/wdtf/

skilled workers." An additional conclusion from Heinrich stated, "There is a critical need for us to target more resources to adolescents and young adults before and during the sensitive period of their transition from secondary education to additional education and training and/or into the workforce."

Some researchers argue that the positive impacts of these programs have often been underestimated due to factors such as the use of only short term evaluations (which would adversely affect child development programs disproportionally) and the exclusion of any societal benefits accrued (e.g. crime reduction). Essentially a more comprehensive cost-benefit analysis of these programs is encouraged.

Previous WDTF Research by R&P

Harris (2005) assessed WDTF data from fiscal years 1999 through 2003. Results were reported by wage quintile. It was found that for four of the five years the three lowest quintiles of WDTF participants demonstrated a higher rate of wage progression than non-participants. No clear pattern was found in the two highest wage quintiles. Harris also found that "statistical evidence indicates that WDTF participants have higher rates of retention in Wyoming than either non-participants (general market comparison) or matched controls."

Other Examples of Workforce Program Results

Hollenbeck and Huang (2006) studied short and long term impacts of workforce development programs in Washington state. Their study estimated the net impacts and private and social benefits and costs of 11 workforce development programs

including: Workforce Investment Act (WIA) Title I-B Adult programs, Dislocated Worker programs, apprenticeships, etc. Their findings include:

"Short-term employment impacts are positive for nine of the 11 programs and negative (although not statistically significant) for the other two. Short-term earnings impacts are also positive for nine of the programs, positive but not statistically significant for one of the programs, and negative for the remaining program. The longer-term impacts are similar and even a little better. Employment impacts are positive for all 11 programs, and earnings impacts are positive for 10 of the 11. The benefit-cost analyses show that virtually all of the programs have discounted future benefits that far exceed the costs for participants, and that society also receives a positive return on investment."

Krantz & Mayne (2015) examined six training services administered by the Utah Department of Workforce Services. Of these, they found that "those receiving degree program, occupational training, or paid internship services were better off because of their interactions with DWS." The three programs that were found to be relatively ineffective were GED/HS diplomas, unpaid internships, and life skills (other) programs. See Francis (2013) and Heinrich (2013) for an extensive review of workforce development program results. Hollenbeck (2008) conducted a survey of incumbent worker programs by state and studied the results on Massachusetts's program specifically. The findings include:

- "Public subsidy of incumbent worker training, especially in export-based firms, may be an effective economic development tool for states."

- "The rates of return that accrue to states for their training subsidies are substantial and may be indicative of underinvestment."

- "Despite reaping substantial rates of return, our survey of states suggests very modest levels of funding for such training."

Methodology

Research & Planning linked the WDTF data to wage records and other databases on an individual's social security number (SSN) and/or a business's unemployment insurance (UI) number as necessary. The WDTF dataset contains all the businesses' UI numbers; however, not all of the SSNs for all individuals were available from this dataset. Research & Planning was able to link approximately 86% of those individuals with approved training plans (see http://www.wyomingworkforce.org/businesses/wdtf/ for WDTF program criteria) to the wage records database using first and last names and UI accounts. The final dataset of WDTF participants used in this analysis consisted of 14,039

individuals from 2006Q2 to 2014Q2. While a given individual may have had multiple trainings through this program, this analysis only tracks employment outcomes following the first training date.

In many assessments of a program's impact, it is not possible to employ true randomized experimental and control groups. When this is the case, a nonrandomized design is often employed. In this analysis a quasi-experimental design is utilized. Rossi et al. (1999) state, "One way this is done is to construct experimental and comparison groups by matching program participants as closely as possible to nonparticipants on characteristics that

may be associated with the impact of the program. A second way is to statistically equate participating and nonparticipating targets on measured characteristics that may be related to program outcomes. Although the two procedures are different, the logic behind them is the same". The authors summarize that "In general, the best quasi-experimental design is the one that requires the least amount of matching or statistical adjustment to equate the comparison and experimental groups" (p.340).

Control Group Selection

The *base period* is the program start quarter (i.e. the quarter WDTF participants started a training program) and the

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.
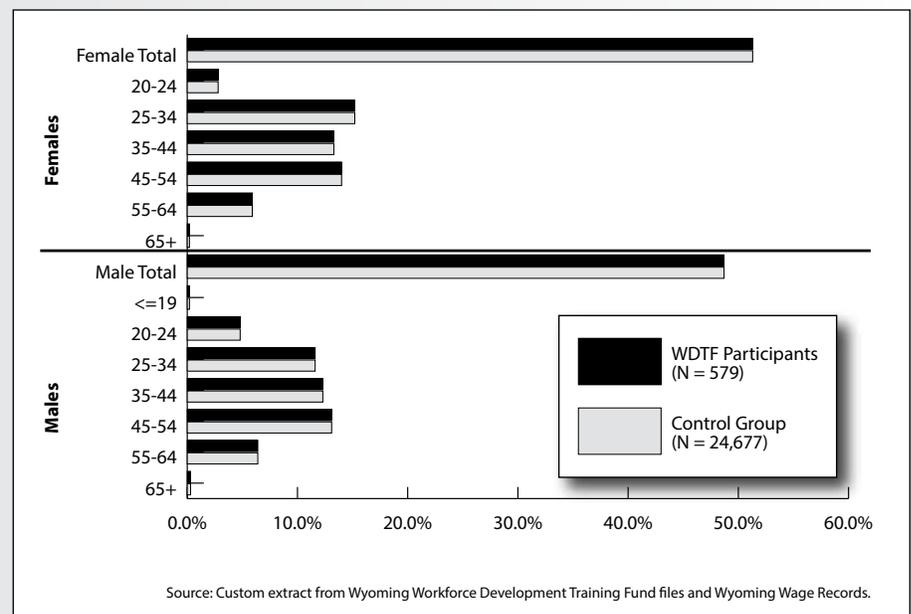
Figure 1a: Gender and Age Distribution for Wyoming Workforce Development Training Fund (WDTF) Participants and Control Group, 2007Q2

three quarters prior. For example, for the 2007Q2 cohort matching, the year-quarters used in the calculation were 2006Q3, 2006Q4, 2007Q1, and 2007Q2.

As described by Rossi, 1999, the purpose of selecting a control group is to select a group of workers that display similar attributes to those of the WDTF participants (see Figures 1a-1c). For this research, a matching process was used to select the control group. Selection categories included gender (male/female), age (19 years old or less, 20-24, 25-34, 35-44, 45-54, 55-64, 65+), the number of quarters worked in the base period, and wage group based on the mean quarterly wages in the base period. Six wage groupings were found to most accurately create similar control groups to the WDTF participants for the base period. These wage categories were based on inflation-adjusted quarterly wages of all individuals in R&P's wage records database. The categories are the low and high outliers (the bottom and top 2.5% of wages), and the remaining quartiles in between. The resulting wage groupings of mean quarterly wage were:

- Less than $400
- $400 to $3,499
- $3,500 to $7,199
- $7,200 to $12,499
- $12,500 to $28,999
- $29,000+

Control group selection for this research was based on the work of Glover (2002). This involves creating comparable distribution
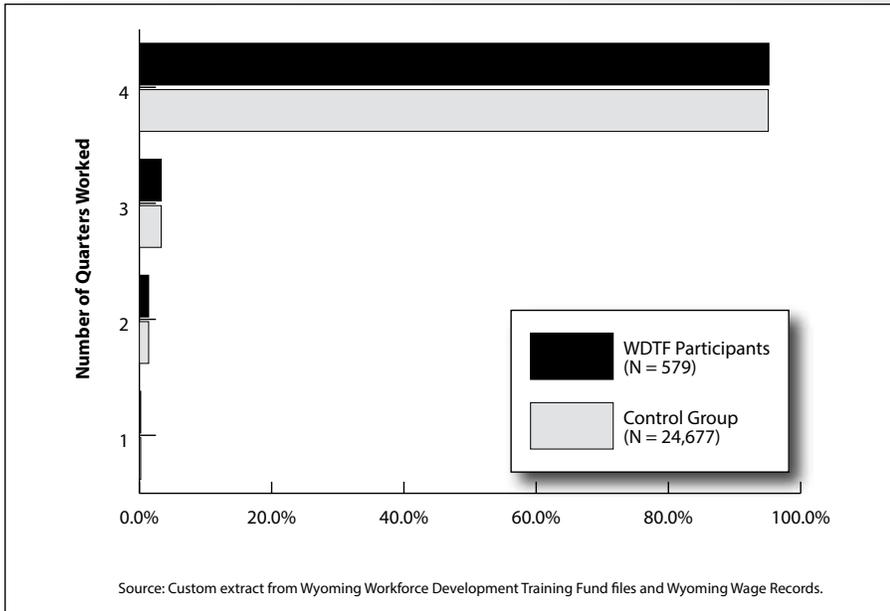
Figure 1b: Distribution of Quarters Worked for Wyoming Workforce Development Training Fund (WDTF) Participants and Control Group, 2006Q3 to 2007Q2
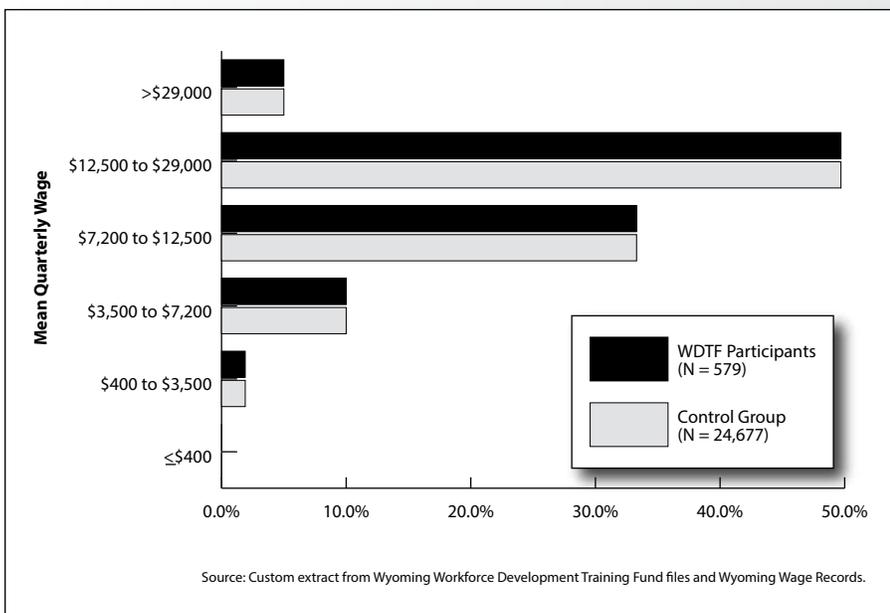
Figure 1c: Distribution of Mean Quarterly Wage for Wyoming Workforce Development Training Fund (WDTF) Participants and Control Group, 2006Q3 to 2007Q2

of characteristics (i.e. gender, age group, quarters worked in the base period, quarterly mean wage group in the base period) for the control group as the experimental group while maximizing control group size.

A final component in matching the WDTF participants to a control group is time; that is, a WDTF participant is matched to a non-participant in the year-quarter of the start of training. The reason for this matching is that if WDTF participants and matched controls were compared starting at random time periods, the prevailing economic conditions at those times (e.g. recession/expansion, etc.) could overwhelm any effect of WDTF participation. To partially control for these changing economic conditions, results are presented as year-quarter cohorts (i.e. the year-quarter of the start of training for the WDTF participant and their matching control group individual).

While this paper focuses on the 2007Q2 participant and non-participant cohorts, the remaining 21 cohorts for time periods 2006Q3 to 2011Q4 are presented in the Appendix at http://doe.state.wy.us/LMI/education_we_connect/WDTF_appendix.htm. The start year-quarter for the 2007Q2 cohort occurred in a relatively positive economic situation, while the economic situation largely regressed over the next 12 quarters (three years) with an increase in initial unemployment insurance (UI) claims (R&P, 2015a), continued UI claims (R&P, 2015b), and the Wyoming seasonally adjusted unemployment rate (R&P, 2015c).

All wages are discussed in 2014 inflation adjusted dollars in this article. When discussing significance levels in the results section, a 95% confidence level of the estimates was the chosen criteria.

The results section is organized into the following two subsections:

1. How well did the control group match the participant group at program start period? This is a necessary condition to examine any future wage increases (or any other metrics of importance) from the start quarter through future time periods between the WDTF participants and the control group. This is accomplished by comparing the demographics of the WDTF participants relative to the control groups by gender and age group, the number of quarters worked in the base period, and the mean quarterly wage in the base period. Given that two dependent groups (i.e. both groups facing similar economic conditions in the Wyoming economy) are being analyzed, the t-test for dependent samples is the appropriate test for assessing whether there is a significant difference between the WDTF participants and the control group.

2. Did the WDTF participant group and control group exhibit significant differences in the change in mean quarterly wage over the 12 quarters after the program start quarter? Additionally, was there a difference in retention rates over time? This is accomplished by tracking the mean quarterly wages and participation rates (relative to the start quarter) of both groups for three quarters before the program start year-quarter through the 12 quarters after the start year-quarter (see Table 2 and Figure 2, page 13). The standard deviation of these wages is displayed, as well as the t-test determining whether the wage differences between the two groups are statistically significant (in a given quarter). A paired t-test is an appropriate test to be employed in determining whether the wage differences between the two groups as pre- and post-

Table 2: T-test of Mean Quarterly Wages During Base Period Between Wyoming Workforce Development Training Fund (WDTF) Participants and Control Group, 2007Q2

| Start Year and Quarter | WDTF Participants | | | Control Group (Non-Participants) | | | T-test Results | | | |
	N	Mean Wages in Start Quarter and 3 Quarters Prior	Standard Deviation	N	Mean Wages in Start Quarter and 3 Quarters Prior	Standard Deviation	Significant Difference α=0.05	t-Value	d.f.	Pr > |t|
2007Q2	579	$15,542	$10,027	24,677	$15,226	$13,029	No	0.74	624.68	0.4574

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.
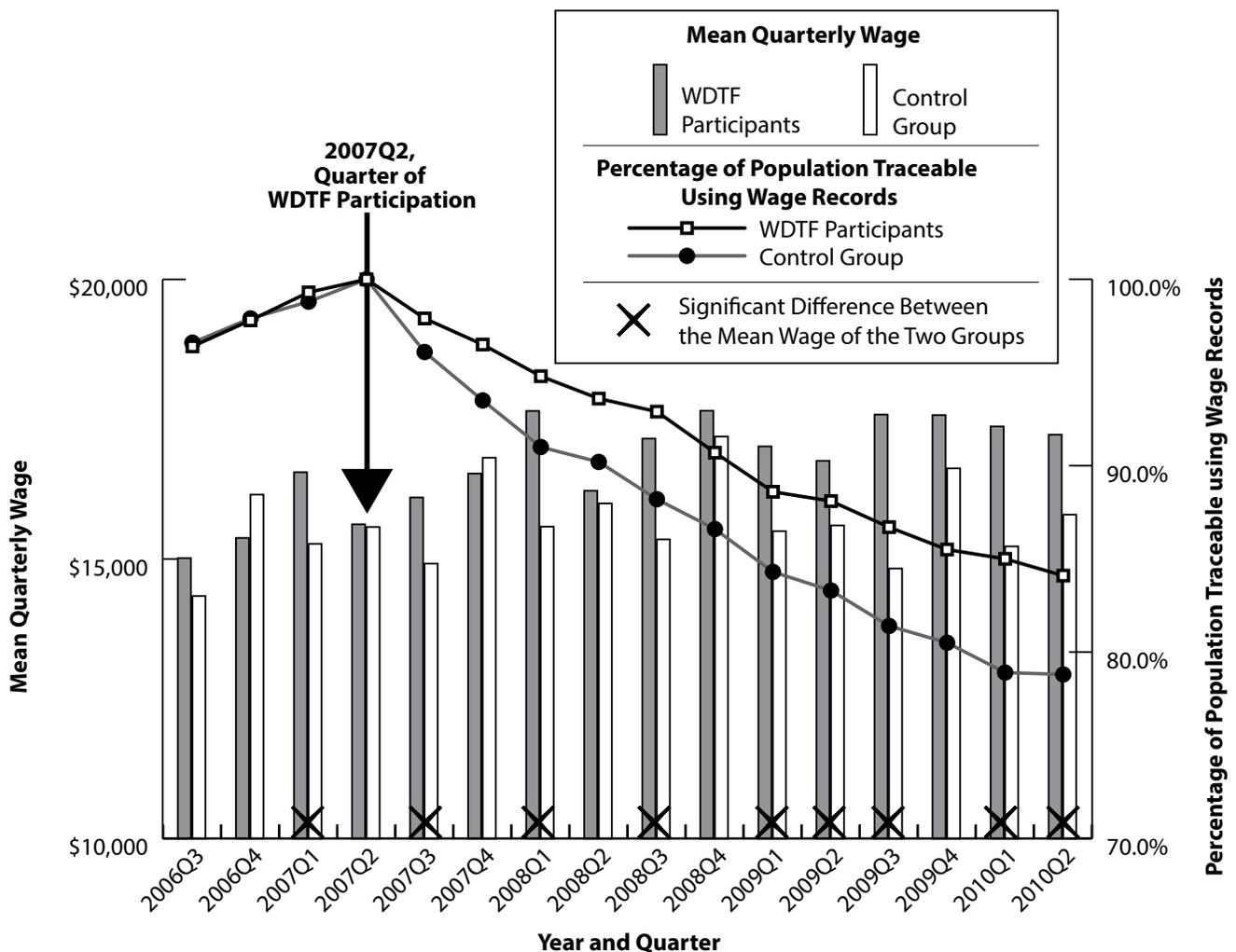
Figure 2: Comparing the Percent of Traceable Records and Mean Quarterly Wage of the 2007Q2 Wyoming Workforce Development Training Fund (WDTF) Participants to the Control Group

(Text continued from page 12)

intervention effects of WDTF participation (or lack thereof in the case of the control group).

While differences in any given quarter are one measure of wage differences between the two groups, effects such as the seasonality of given industries or occupations could cause substantial variation for a given quarter. Therefore, mean quarterly wage differences between the two groups over time were tested at four quarters (one year), eight quarters (two years), and 12 quarters (three years) after the program start year-quarter using a paired t-test. The *mean quarterly wage difference* was calculated by subtracting the mean quarterly wage of the base period from the mean quarterly wage of the post-training period. For example, the mean quarterly wage difference for 2007Q2 WDTF participants at 12 quarters was $929: a post-training period mean quarterly wage of $16,471 minus a base period mean quarterly wage of $15,542. By comparison, the mean quarterly wage difference for the control group (non-WDTF participants) at 12 quarters was $17: a post-training period mean quarterly wage of $15,243 minus a base period mean quarterly wage of $15,226.

Results

It is important to assemble a control group as similar as possible to that of the WDTF participants during the base period. As can be seen in Figures 1a-1c (see pages 10-11), the WDTF participants from 2007Q2 and the control group (*non-WDTF participants*) selected by R&P demonstrated very similar distributions across gender, age, quarters worked in the last four quarters, and wage group. The same is true of all other cohorts as well (see the Appendix

online). The 2007Q2 cohorts exhibited a slight female majority (51.3%), approximately 95% had worked in all four of the previous four quarters, and slightly less than half had a mean quarterly wage of $12,500 to $29,000 over that same period.

Table 2 (see page 13) shows that overall, the mean quarterly wages for the WDTF participants and the control group were not significantly different during the base period. Table 2 is important in determining whether wage differences between the two groups can be statistically compared after the start year-quarter. If the control group selection is conducted effectively, the mean quarterly wages in the base period between the two groups should rarely be significantly different. The null hypothesis is that the mean wages between the two groups are equal. Failing to reject the null hypothesis is a prerequisite to signifying the control group is suitably matched to the WDTF participant group for further analysis. The results from Figures 1a-1c and Table 2 demonstrate this was indeed the case. In fact, of the 22 WDTF participant and control group cohorts analyzed, only one (2009Q4) showed a significant difference.

Figure 2 (see page 13) displays the mean quarterly wage of both the 2007Q2 WDTF participants and the control group for the same period, the three quarters prior to, and the 12 quarters after WDTF training. The program start year-quarter (2007Q2) is identified by an arrow. Statistically significant wage differences between WDTF participants and the control group for a given year and quarter are marked with an "X" over the corresponding year-quarter. The bar chart in Figure 2 shows that the mean quarterly wage for WDTF participants was significantly higher than the mean quarterly wage of non-participants in eight of the 12 quarters following the training received

by the WDTF participants. In addition, the line chart in Figure 2 shows that a greater proportion of WDTF participants could be found working in Wyoming during those 12 post-training quarters than non-participants. After 12 quarters, 84.1% of WDTF participants were found in wage records, while 78.8% of the control group was represented. This represents an average annual decrease of 0.8% for WDTF participants compared to 1.2% for non-participants. This higher retention rate in the Wyoming economy over time is generally true across all cohorts.

Table 3 shows the data used to create Figure 2, along with the number of workers in the WDTF program and the control group. Of the 16 quarters shown in Table 3 and Figure 2, nine of the 16 differences (56.3%) in wages between WDTF participants and non-participants were statistically significant. All nine demonstrated that WDTF participants

exhibited higher mean quarterly wages than non-participants.

Table 4 (see page 16) displays the paired t-test results of the mean quarterly wage difference across selected time periods, from the start year-quarter of training (in this case, 2007Q2) to four quarters (one year), eight quarters (two years), and 12 quarters (three years) later. The t-test used in this analysis indicated that WDTF participants experienced higher (and statistically significant) wage increases than non-WDTF participants. In real (inflation-adjusted) dollars, WDTF participants experienced an increase of $929 12 quarters after the training period (2007Q2), compared to a $17 increase for non-WDTF participants.

Figures 3a and 3b (see page 17) display the distribution of the WDTF participants and the control group in the pre- and post-intervention periods (12 quarters after

Table 3: Number of Wyoming Workforce Development Training Fund (WDTF) Participants and Control Group Found in Wage Records, Mean Quarterly Wage, the Standard Deviation in Wages, the Wage Difference, and a Determination of Whether the Difference was Statistically Significant for the Quarter of Program Entry (2007Q2), the Three Quarters Prior to and 12 Quarters After Program Entry

	WDTF Participants			Control Group			T-test Results				
Year and Quarter	N	Mean Wage	Standard Deviation Wage	N	Mean Wage	Standard Deviation Wage	Wage Difference	Significant Difference α=0.05	t-Value	d.f.	Pr > |t|
2006Q3	558	$15,015	$9,928	23,846	$14,339	$12,762	$676	No	1.58	600.89	0.1152
2006Q4	566	$15,376	$9,333	24,166	$16,152	$16,684	-$776	No	-1.91	652.64	0.0569
2007Q1	575	$16,552	$13,051	24,390	$15,272	$18,282	$1,280	Yes	2.30	628.30	0.0218
2007Q2	**579**	**$15,621**	**$11,164**	**24,677**	**$15,573**	**$16,558**	**$48**	**No**	**0.10**	**639.16**	**0.919**
2007Q3	567	$16,101	$12,160	23,715	$14,918	$13,402	$1,183	Yes	2.28	599.34	0.0227
2007Q4	559	$16,529	$12,674	23,073	$16,812	$21,625	-$282	No	-0.51	639.42	0.611
2008Q1	549	$17,647	$17,379	22,462	$15,579	$16,081	$2,069	Yes	2.76	571.17	0.006
2008Q2	542	$16,221	$9,699	22,251	$15,994	$16,745	$227	No	0.53	622.33	0.5984
2008Q3	538	$17,153	$14,040	21,756	$15,352	$16,609	$1,801	Yes	2.92	574.80	0.0036
2008Q4	525	$17,651	$16,640	21,367	$17,190	$22,794	$461	No	0.62	573.40	0.535
2009Q1	513	$17,014	$11,498	20,804	$15,499	$14,566	$1,515	Yes	2.93	553.30	0.0036
2009Q2	510	$16,755	$11,099	20,558	$15,601	$14,699	$1,155	Yes	2.30	554.23	0.0218
2009Q3	502	$17,582	$13,290	20,087	$14,829	$13,927	$2,752	Yes	4.58	528.87	<.0001
2009Q4	495	$17,575	$10,839	19,873	$16,621	$18,092	$954	No	1.89	564.87	0.0588
2010Q1	492	$17,370	$12,123	19,459	$15,225	$13,645	$2,145	Yes	3.86	522.94	0.0001
2010Q2	487	$17,224	$11,104	19,440	$15,793	$16,207	$1,431	Yes	2.77	539.22	0.0058

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

intervention), respectively. The following figures show the frequency distributions of each group, with 13 wage groupings. The control groups were selected using six wage groupings relative to the WDTF participants (see Figure 1c, page 11). Therefore, while the frequency distribution of wages is the same between the two groups using the six original wage groupings, using 13 delineations accounts for the slight deviations between the two groups in Figure 3a. Thirteen delineations were used in these figures to allow for more differentiation and equal intervals between groupings ($2,500).

In the base period, WDTF participants had a mean quarterly wage of $15,542 while the control group had a mean quarterly wage of $15,226, a difference that was not statistically significant. In both figures, the distributions are positively skewed (i.e. the right tail of each distribution is longer than the left tail, corresponding to a smaller number of occurrences at the high end of the distribution) with the control group being positively skewed more so than the WDTF participant group. Note: Figures 3a and 3b do not demonstrate this skewness in a textbook fashion, as all large observations are contained in the $30,000+ wage grouping.

By 2010Q2, a greater proportion of

WDTF participants (5.8%) moved into the highest six wage groupings relative to the control group (1.8%). This tended to shift the WDTF participant mean quarterly wage distribution to the right of the control group.

Collectively, these changes led to the two groups diverging from a non-significant difference in mean quarterly wage. The WDTF participants experienced a significant wage increase ($16,524 mean quarterly wage) relative to the control group ($15,265).

Of the 22 WDTF participant cohorts analyzed in this research (2006Q3 to 2011Q4), 15 experienced a significant wage increase relative to the control group (non-WDTF participant) cohorts from the same year and quarter (see Table 5, page 18). Full results for each cohort are published in the Appendix to this article, available online at http://doe.state.wy.us/LMI/trends/0116/WDTF_Appendix.pdf.

Future Research

For this analysis, control groups were chosen using four main groupings (gender, age group, number of quarters worked in the last four quarters, and wage group) that could all be considered categorical variables

Table 4: Difference in Mean Quarterly Wages Since the Start Year and Quarter (2007Q2) for Wyoming Workforce Development Training Fund (WDTF) Participants and Control Group

Quarters after Training	N	WDTF Participants Difference in Mean Quarterly Wages since Start Year and Quarter	Standard Deviation Wage	N	Control Group Difference in Mean Quarterly Wages since Start Year and Quarter	Standard Deviation Wage	T-test Results Significant Difference α=0.05	t-Value	d.f.	Pr > |t|
4	574	$688	$3,746	24,072	$236	$6,914	Yes	2.78	669.8	0.0056
8	574	$808	$3,945	24,170	$182	$6,875	Yes	3.67	658.58	0.0003
12	574	$929	$4,118	24,216	$17	$6,917	Yes	5.13	652.12	<.0001

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

(although number of quarters worked could also be considered a discrete variable). Further analysis may include discrete or continuous variables in addition to, or in place of, some of these categorical variables. A logistic propensity scoring model would allow for the use of more discrete/continuous variables. For example, rather than a wage grouping, a worker's exact quarterly wage could be included in the model. Resulting propensity scores for participants could then be matched to those of non-participants within a certain tolerance of variation.

Recent research suggests that propensity scoring may yield superior matching results to other matching methods. For example, Dehejia and Wahba (1999) found that "when we apply these methods (propensity scoring) to … nonexperimental data for a range of propensity score specifications and estimators, we obtain estimates of the treatment impact that are much closer to the experimental treatment effect than … nonexperimental estimates."

While the analysis discussed in this article focuses on wage changes and attachment to the Wyoming labor force collectively,

Source: Research & Planning Wage Records database and Wyoming Department of Workforce Services Workforce Development Training Fund (WDTF) database.
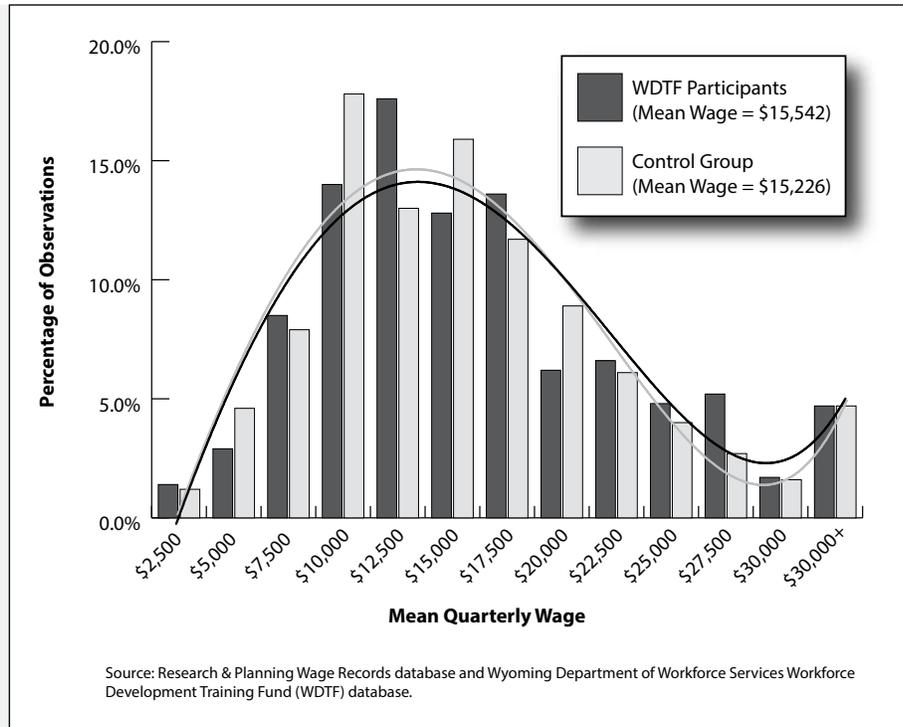
Figure 3a: **Pre-Training Inflation-Adjusted Mean Quarterly Wage of Workforce Development Training Fund (WDTF) Participants and Control Group, 2006Q3 to 2007Q2**

Source: Research & Planning Wage Records database and Wyoming Department of Workforce Services Workforce Development Training Fund (WDTF) database.
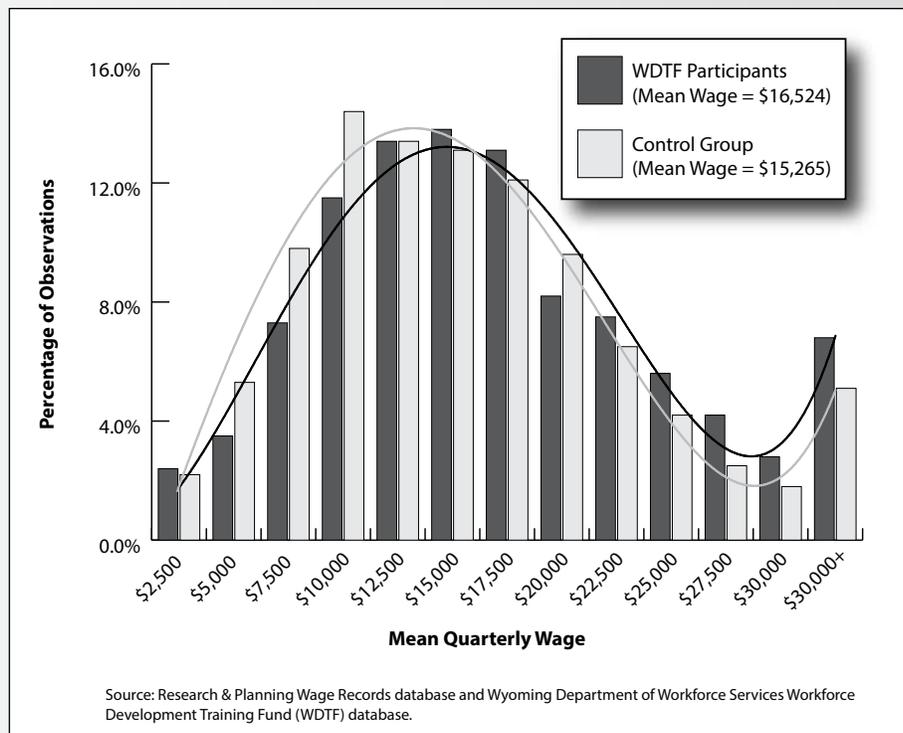
Figure 3b: **Post-Training Inflation-Adjusted Mean Quarterly Wage of Workforce Development Training Fund (WDTF) Participants and Control Group, 2007Q3 to 2010Q2**

further analysis could explore program effects on tenure with a given employer or industry. One paradoxical result of such an analysis is that the program itself could be deemed successful in terms of retaining workers in the Wyoming labor force; however the program could actually lead to churn between employees/employers or employees/industries as workers search for more desirable employment opportunities. Thus, while the WDTF program may benefit Wyoming as a whole, it may also cause hardship to a given employer that provided WDTF matching funds.

As stated in the introduction, this analysis only tracked program effects after the first training event. In the future, the effect of multiple training events for the same individual could be explored. Also, the current analysis treated a training event as a dichotomous event (i.e. "did a worker receive training, yes or no?"). Future research could explore if the type of training received has any influence on program effects.

This analysis examines possible positive effects of the WDTF program (e.g. enhanced wage progression). However, for a more comprehensive analysis, the benefits accrued due to the program (including any quantifiable societal benefits) should be compared to the program cost (i.e. cost/benefit analysis). By conducting this

Table 5: Paired T-test of Difference in Real (Inflation-Adjusted) Mean Quarterly Wages (WDTF Participants Relative to Control Group) 12 Quarters (3 Years) after Training Start, 2006Q3 to 2011Q4

| Start Year-Quarter | WDTF Participants | | | Control Group | | | Significant Difference α=0.05 | t-Value | d.f. | Pr > \|t\| |
	N	Difference in Mean Quarterly Wages since Start Yr-Qtr	St. Dev.	N	Difference in Mean Quarterly Wages since Start Yr-Qtr	St. Dev.				
2006Q3	255	$750	$3,952	22,031	$721	$4,638	No	0.12	262.16	0.9076
2006Q4	406	$1,536	$4,804	5,638	$460	$5,057	Yes	4.34	471.99	<.0001
2007Q1	650	$913	$6,190	25,164	$260	$6,987	Yes	2.65	692.4	0.0083
2007Q2	574	$929	$4,118	24,216	$17	$6,917	Yes	5.13	652.12	<.0001
2007Q3	492	$989	$4,447	8,236	$97	$6,218	Yes	4.21	611.92	<.0001
2007Q4	752	$655	$4,738	16,379	-$323	$8,755	Yes	5.26	1003.7	<.0001
2008Q1	333	$934	$4,639	5,616	-$98	$7,473	Yes	3.78	441.41	0.0002
2008Q2	520	$320	$3,248	20,530	-$172	$6,705	Yes	3.28	636.94	0.0011
2008Q3	399	$717	$4,472	3,937	-$280	$6,699	Yes	4.02	596.52	<.0001
2008Q4	423	$314	$3,306	14,917	-$520	$6,678	Yes	4.91	525.09	<.0001
2009Q1	406	$26	$4,921	4,035	-$591	$11,630	Yes	2.02	957.89	0.0435
2009Q2	328	-$389	$6,999	10,498	-$513	$6,919	No	0.32	347.27	0.7528
2009Q3	377	$192	$4,806	8,522	-$177	$4,865	No	1.46	410.82	0.1446
2009Q4	864	$155	$3,086	35,088	-$57	$6,236	No	1.92	1045	0.0555
2010Q1	623	$658	$3,539	11,155	$294	$5,128	Yes	2.43	775.79	0.0154
2010Q2	523	$372	$8,490	9,950	$22	$6,751	No	0.93	557.24	0.3542
2010Q3	550	$1,124	$4,290	1,079	$400	$5,898	Yes	2.82	1436.9	0.0048
2010Q4	407	$624	$4,811	13,684	$249	$4,589	No	1.55	428.27	0.1214
2011Q1	378	$974	$5,702	6,422	$51	$8,288	Yes	2.97	476.16	0.0031
2011Q2	576	$941	$3,822	8,472	$152	$5,250	Yes	4.66	731.16	<.0001
2011Q3	351	$1,117	$3,185	5,857	$27	$5,750	Yes	5.86	498.93	<.0001
2011Q4	402	$198	$6,711	10,724	-$92	$6,296	No	0.85	427.88	0.3939

Source: Custom extract from Wyoming Workforce Development Training Fund files and Wyoming Wage Records.

analysis on specific factors such as type of training, it may be possible to identify the aspects of the WDTF program that allocate funds the most efficiently.

Combining Efficient Program Administration with Effective Evaluation Strategies

During the past several decades, state and federal governments have placed an increased emphasis on program evaluation for programs that utilize public funding. The Government Performance and Results Act of 1993 and several memorandums from the Office of Management and Budget between 2009 and 2012 promoted an emphasis on program evaluation and the use of these evaluations in budget establishment.

Going forward, the application process could be modified to aid in efficient program evaluation. Many of the questions on the application are employer-reported. During the application review process, fields such as business type (based on a two-digit NAICS grouping) and business size could be verified by DWS. Relying solely on employer-reported information may lead to inaccurate information being used in evaluation. For example, if the business type is employer-reported, two companies that provide the same service could choose two different but similar categories, such as information (two-digit NAICS code = 51) or professional & technical services (two-digit NAICS code = 54; see Table 1d, page 6). There are no definitions provided during the application process to aid in selecting the appropriate industry. Ideally, a DWS employee would verify the correct NAICS code for future evaluation.

The same reasoning would hold true when choosing the type of training. For example, how should a health care provider choose between technical, health care and industry-specific technical training (see Table 1b, page 5)? Documentation and definitions for each field should be provided to guide the employer in making these decisions. Similar documentation also should be available to the evaluator. Incorrect information could skew the creation of control groups if they were based on types of business and training.

Another issue that could be addressed is developing a methodology for choosing a consistent time frame to determine the size of the business. On the new positions application (see the Appendix online), the size of the business is determined by the question, "Highest number of employees on payroll during the past 12 months," while on the existing position application (see the Appendix online) the question is simply "Number of Employees." Ideally, all applications would address the business size (based on the number of employees) in a way that is based on a consistent time period. The Quarterly Census of Employment and Wages – an administrative database utilized by R&P, the U.S. Bureau of Labor Statistics, and other agencies – determines the employment as of the 12th of the month. This data source would likely be utilized to construct a control group based on business size. One possibility is asking the employer the number of employees on the 12th day of the month of the expected training start date.

Perhaps not all these aspects can be addressed, but the role of evaluation in overall program administration should be considered when addressing the objectives of a program. Further recommendations regarding a similar program (i.e. Human Capital Management Services JobAssist Program in Wyoming) will be published in a forthcoming article from R&P.

References

Dehejia, R.H., & Wahba, S. (1999). Causal effects in nonexperimental studies: Reevaluating the evaluation of training programs. *Journal of American Statistical Association, 94*(448), 1053-1062.

Francis, C.M. (2013). What we know about workforce development for low-income workers: evidence, background and ideas for the future. *National Poverty Center Working Paper Series*. Retrieved August 19, 2015, from http://npc.umich.edu/publications/u/2013-09-npc-working-paper.pdf

Glover, W. (2002), Compared to what? Purpose and method of control group selection. *Wyoming Labor Force Trends, (39)*6. Retrieved August 6, 2015, from http://doe.state.wy.us/lmi/0602/a2.htm

Harris, M. (2005). Labor market outcomes of Workforce Development Training Fund participants. *Occasional Paper No. 3. Workforce Development Training Fund Evaluation at the Macro and Micro Levels*. Research & Planning, Wyoming Department of Workforce Services. Retrieved August 11, 2015, from https://doe.state.wy.us/LMI/Occasional/No3/Occasional_3.pdf

Harris, P. (In press). Impact evaluation of the Human Capital Management Services (HCMS) JobAssist program in Wyoming.

Heinrich, C.J. (2013). Targeting workforce development programs: Who should receive what services? And how much? University of Maryland School of Public Policy. Retrieved August 18, 2015, from http://umdcipe.org/conferences/WorkforceDevelopment/Papers/Workforce%20Development_Heinrich_Targeting%20Workforce%20Development%20Programs.pdf

Hollenbeck. K. (2008). Is there a role for public support of incumbent worker on-the-job training? *Policy Paper No. 2008-001*. W.E. Upjohn Institute for Employment Research. Retrieved October 21, 2015, from http://research.upjohn.org/cgi/viewcontent.cgi?article=1000&context=up_policypapers

Hollenbeck, K. & Huang, W.J. (2006). Net impact and benefit-cost estimates of the workforce development system in Washington state. *Upjohn Technical Report No. 06-020*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research. Retrieved August 7, 2015, from http://research.upjohn.org/cgi/viewcontent.cgi?article=1023&context=up_technicalreports

Jacobson, L. & LaLonde, R.J. (2013). Using data to improve the performance of workforce training. Brookings. Retrieved August 18, 2015, from http://www.brookings.edu/research/papers/2013/04/17-jacobson-lalonde-workforce-training

Krantz, J. & Mayne, C. (2015). Policy highlights from "Is job training justified?" An analysis of job training services as administered by Utah's Department of Workforce Services. Retrieved August 11, 2015 from https://jobs.utah.gov/wi/trainingstudy/jobtraining.pdf

Lalonde, R. (1986). Evaluating the econometric evaluations of training programs. *American Economic Review*, 604-620.

Office of Management and Budget. (1993). Government Performance Results Act of 1993. Retrieved October 21, 2015, from https://www.whitehouse.gov/omb/mgmt-gpra/gplaw2m

Office of Management and Budget. (2009). Memorandum for the heads of executive departments and agencies. M-10-01. Dated October 7, 2009. Retrieved October 21, 2015, from https://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-01.pdf

Research & Planning, Wyoming Department of Workforce Services. (2015a). Normalized Initial Unemployment Claims: 2005-2015. Updated August 2015. Retrieved August 7, 2015, from http://doe.state.wy.us/LMI/ui/initial_chart.htm

Research & Planning, Wyoming Department of Workforce Services. (2015b). Normalized Continued Weeks Claimed: 2005-2015. Updated August 2015. Retrieved August 7, 2015, from http://doe.state.wy.us/lmi/ui/cont_chart.htm

Research & Planning, Wyoming Department of Workforce Services. (2015c). Wyoming Seasonally Adjusted Labor Force, Employment and Unemployment, 1976-2014. Updated August 2015. Retrieved August 7, 2015 from http://doe.state.wy.us/LMI/LAUS/7800sa.htm

Rossi, P. H., Freeman, H.E., & Lipsey, M.W. (1999). *Evaluation a Systematic Approach* (Sixth ed., pp. 309-340). Thousand Oaks, CA: Sage Publications.

Statistical Consultant System (2010). Two sample t-test with SAS. A system to teach statistical application. Retrieved August 6, 2015, from http://www.stat.purdue.edu/~tqin/system101/method/method_two_t_sas.htm

Wyoming Department of Workforce Services (2012). Workforce Development Training Fund Home. Retrieved August 6, 2015, from http://www.wyomingworkforce.org/employers-and-businesses/workforce-development-training-fund/Pages/default.aspx

Employment and Wage Change for Selected Industries in Wyoming, 2005Q3-2015Q3

By: Michael Moore, Editor

Employment and wages in Wyoming continued to decline from year-ago levels in third quarter 2015 (2015Q3), according to the most recent data from the Unemployment Insurance employer payroll tax system. This is the first time that total wages, average monthly employment, and average weekly wage decreased from prior-year levels for consecutive quarters since the state's economic downturn of 2009Q1 to 2010Q1. Total payroll represents approximately 43% of what households in Wyoming can spend on goods, services, and housing (Bullard, 2013).

The Research & Planning (R&P) section of the Wyoming Department of Workforce Services publishes employment and wage estimates across all industries in Wyoming four times per year in *Wyoming Labor Force Trends* (January, April, July, and October) as part of the Quarterly Census of Employment and Wages (QCEW)

Table 1: Over-the-Year Percentage Change in Average Monthly Employment for Selected Industries in Wyoming, 2005Q3-2015Q3

Year and Quarter	Total, All Industries	Support Activities for Mining (NAICS 213)	Private Coal Mining (NAICS 2121)	Construction (NAICS 23)	Ed. & Health Services, (NAICS 61 & 62)
		Industry Title and NAICS* Code			
2005Q3	3.4	17.8	3.5	9.1	1.8
2005Q4	4.1	18.5	7.3	13.3	2.0
2006Q1	4.3	26.1	15.3	16.5	1.6
2006Q2	4.1	24.1	19.1	16.7	2.0
2006Q3	3.9	22.4	20.6	13.2	2.2
2006Q4	4.3	19.8	17.1	15.3	2.2
2007Q1	4.8	9.5	9.7	12.2	3.2
2007Q2	3.7	2.9	6.9	9.1	3.1
2007Q3	3.7	-2.3	4.9	11.3	3.7
2007Q4	3.8	-2.8	7.0	11.1	3.9
2008Q1	3.6	0.4	8.3	13.4	4.9
2008Q2	3.2	3.7	8.3	6.5	5.3
2008Q3	3.4	10.9	8.1	6.4	5.6
2008Q4	2.3	12.9	7.5	-1.1	5.7
2009Q1	-1.0	1.0	5.9	-13.9	5.1
2009Q2	-3.4	-19.8	3.9	-13.7	4.6
2009Q3	-5.3	-31.0	2.5	-16.2	3.7
2009Q4	-6.3	-32.9	0.1	-16.7	3.7
2010Q1	-4.7	-26.7	-1.7	-11.6	1.6
2010Q2	-1.7	-6.1	-3.0	-7.4	1.7
2010Q3	0.4	10.8	-2.2	-3.7	1.7
2010Q4	1.1	15.3	0.0	-3.0	2.0
2011Q1	1.1	18.0	0.5	-8.4	2.9
2011Q2	0.8	17.9	0.9	-8.2	2.1
2011Q3	1.0	16.4	0.6	-5.5	1.0
2011Q4	2.0	16.0	2.1	-1.9	0.1
2012Q1	2.5	11.7	2.8	3.4	-0.6
2012Q2	2.2	4.7	1.4	6.4	-0.3
2012Q3	0.7	-5.1	-0.2	0.5	0.5
2012Q4	0.3	-9.0	-3.6	-0.9	0.7
2013Q1	0.3	-10.4	-4.7	2.6	2.0
2013Q2	0.2	-7.7	-5.3	0.5	1.6
2013Q3	0.5	-1.9	-5.9	0.8	1.2
2013Q4	0.6	0.2	-4.8	1.9	0.9
2014Q1	1.2	5.6	-4.1	6.8	0.3
2014Q2	1.8	6.8	-2.7	10.2	0.2
2014Q3	2.0	6.4	-0.4	10.7	0.1
2014Q4	1.7	7.2	0.8	7.9	0.4
2015Q1	1.3	-3.3	1.6	3.6	0.1
2015Q2	-0.5	-23.8	2.8	-3.2	0.8
2015Q3(p)	-1.3	-30.4	0.0	-4.4	0.8

Shaded areas indicate periods of economic downturn.

(p)Preliminary.

*North American Industry Classification System. Educational & Health Services is a supersector industry comprised of Educational Services (NAICS 61) and Health Care & Social Assistance (NAICS 62).

Source: Quarterly Census of Employment and Wages.

statistical program. The current issue of Trends includes employment and wage estimates for 2005Q3 to 2015Q3 (see pages 29-30). In addition, R&P updates its website quarterly to include QCEW employment and wage estimates at the industry and county levels. These tables are available at http://doe.state.wy.us/LMI/toc_202.htm.

For the purposes of this article, a *downturn* is defined as a period of at least two consecutive quarters when Wyoming experienced an over-the-year decrease in total wages, average monthly employment, and average weekly wage. There are two periods of economic downturn discussed in this article. In 2009Q1, Wyoming entered an economic downturn that lasted five quarters (2009Q1 to 2010Q1); this is referred to in this article as the *previous downturn.* Employment and wage levels decreased during each of those five quarters compared to previous year levels. After a period of moderate growth that lasted from 2010Q2 to 2015Q1, Wyoming entered another downturn that began in 2015Q2; this is referred to in this article as the *most recent downturn.*

The Figure on page 30 shows the over-the-year percentage changes in employment and wages in Wyoming from 2005Q3 to 2015Q3; periods of economic downturn are illustrated with shaded boxes. From 2005Q3 to 2008Q4, Wyoming experienced a period of rapid economic growth; during this period, wage and employment levels increased from prior year levels during every quarter. Wyoming then entered the previous downturn (2009Q1 to 2010Q1), followed by a period of moderate growth (2010Q2 to 2015Q1), and then the most recent downturn that began in 2015Q2. During the period illustrated in this graph, the over-the-

year change in total wages was as high as 17.1% (2006Q4) and as low as -8.4% (2009Q3 and 2009Q4).

This article provides a brief discussion on the economic trends in four selected industries in Wyoming: support activities for mining, private coal mining, construction, and educational & health services. Each industry responds differently to the state's economic conditions, and has its own trends, peaks, and troughs in the graphics presented in this article. Table 1 (see page 22) shows the over-the-year percentage change in average monthly employment for each of these four industries, with periods of economic downturn shaded gray. Table 1 shows that during the previous downturn, support activities for mining experienced a substantial decline in average monthly employment during four of the five quarters, while education & health services experienced an over-the-year increase during each of the five quarters.

Table 2 shows the over-the-year percentage change in total wages. The decrease in total wages in support activities for mining during the first two quarters of the most recent downturn (-30.9% and -36.5%, respectively) were similar to the decrease seen throughout the previous downturn (-27.5% in 2009Q2 to -38.1% in 2009Q3). Over-the-year increases in total wages in educational & health services were similar during both periods of downturn.

Comparable graphics to the Figure on page 30 are included for each of the four industries discussed in this article. Employment and wage tables for the industry level in Wyoming are available online at http://doe.state.wy.us/LMI/toc_202.htm.

Table 2: Over-the-Year Percentage Change in Total Wages for Selected Industries in Wyoming, 2005Q3-2015Q3

		Industry Title and NAICS* Code			
Year and Quarter	Total, All Industries	Support Activities for Mining (NAICS 213)	Private Coal Mining (NAICS 2121)	Construction (NAICS 23)	Ed. & Health Services, (NAICS 61 & 62)
2005Q3	11.7	38.1	0.6	20.5	7.0
2005Q4	10.1	29.0	8.0	21.4	7.3
2006Q1	15.0	45.4	18.7	31.8	8.8
2006Q2	15.5	37.0	36.2	31.3	7.0
2006Q3	14.8	35.0	21.2	24.5	5.8
2006Q4	17.1	35.7	25.7	33.8	6.3
2007Q1	14.6	22.6	16.7	26.0	8.4
2007Q2	12.1	11.3	6.5	21.2	9.7
2007Q3	8.0	5.8	9.4	25.0	9.5
2007Q4	11.3	4.1	9.3	26.0	9.4
2008Q1	10.7	4.9	6.8	34.8	9.9
2008Q2	8.9	10.2	13.1	15.2	11.8
2008Q3	10.1	16.3	9.1	13.2	10.2
2008Q4	6.7	18.5	10.8	1.7	12.6
2009Q1	-1.2	0.4	3.2	-21.0	4.9
2009Q2	-5.0	-27.5	1.6	-16.6	4.3
2009Q3	-8.4	-38.1	6.9	-20.3	3.5
2009Q4	-8.4	-37.8	-5.2	-22.2	6.0
2010Q1	-4.9	-31.8	4.8	-13.3	1.9
2010Q2	1.1	0.1	-3.1	-3.9	4.5
2010Q3	4.8	22.2	-1.3	1.0	6.2
2010Q4	6.0	26.1	7.0	6.2	3.2
2011Q1	5.4	26.3	8.6	-7.0	6.9
2011Q2	4.7	26.2	4.0	-9.2	7.1
2011Q3	6.5	26.8	7.6	-3.2	2.9
2011Q4	2.5	20.9	-1.0	-5.2	-0.2
2012Q1	8.0	24.4	5.3	6.2	4.6
2012Q2	4.8	13.6	-3.0	16.5	0.7
2012Q3	0.2	-4.6	-3.8	1.2	-1.0
2012Q4	4.1	-6.3	-0.9	1.8	10.0
2013Q1	1.1	-10.8	-10.2	5.8	1.5
2013Q2	0.6	-7.6	-0.6	-3.6	0.8
2013Q3	1.9	-0.6	-1.3	0.6	1.9
2013Q4	1.5	4.3	-0.8	11.5	-3.9
2014Q1	3.3	12.2	-4.2	9.8	3.0
2014Q2	4.9	12.7	-1.4	16.4	3.1
2014Q3	6.4	11.1	-0.4	17.1	2.9
2014Q4	5.8	9.8	4.1	3.9	2.5
2015Q1	3.0	-5.2	4.5	2.6	2.8
2015Q2	-0.8	-30.9	7.0	-4.5	4.4
2015Q3(p)	-2.5	-36.5	4.6	-4.7	3.2

Shaded areas indicate periods of economic downturn.

(p)Preliminary.

*North American Industry Classification System. Educational & Health Services is a supersector industry comprised of Educational Services (NAICS 61) and Health Care & Social Assistance (NAICS 62).

Source: Quarterly Census of Employment and Wages.

Support Activities for Mining (NAICS 213) and Coal Mining (NAICS 2121)

The mining sector – particularly coal, oil, and natural gas – is a "major economic engine of the Wyoming economy, both in direct employment and all industries that stem from this activity," such as transportation, food service, and accommodations (R&P, in press). Because of this, market conditions for coal, oil, and natural gas are "very important to the Wyoming economy in terms of employment, gross state product, and government revenue." In 2015Q1, for example, mining accounted for approximately $1 of every $5 in total covered Unemployment Insurance

(UI) wage and salary compensation in Wyoming, or 19.1% of the total payroll.

In the fall of 2015, "Wyoming's economy was exposed to a substantial decline in the prices of oil, an extended period of low natural gas prices, and the erosion in the price of coal" (R&P, in press). The effects of the diminished demand for these natural resources can clearly be seen in support activities for mining (see Figure 1) and private coal mining (see Figure 2, page 25). The support activities for mining subsector and private coal mining industry group are part of the mining sector as identified by the North American Industry Classification System (NAICS).

(p)Preliminary.
*North American Industry Classification System.
Source: Quarterly Census of Employment and Wages.
Note: Gray boxes indicate two periods of economic downturn in Wyoming: 2009Q1-2010Q1 and 2015Q2-2015Q3.
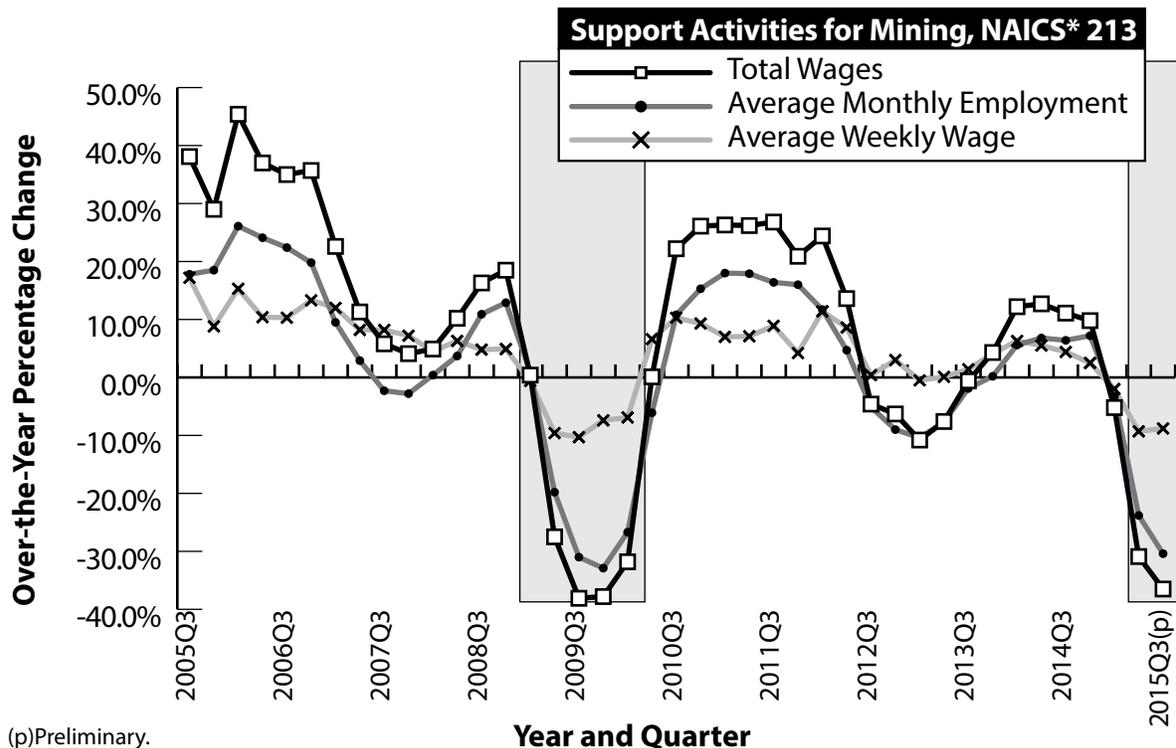
Figure 1: Over-the-Year Percentage Change for Total Wages, Average Monthly Employment, and Average Weekly Wage in Support Activities for Mining (NAICS 213) in Wyoming by Year/Quarter, 2005Q3-2015Q3

According to NAICS, businesses in the support activities for mining (NAICS 213) subsector primarily provide "support services, on a contract or fee basis, required for the mining and quarrying of minerals and for the extraction of oil and gas" (BLS, 2014). In addition, this industry also includes establishments that perform exploration (except geophysical surveying and mapping) for mining.

Figure 1 shows that the over-the-year percentage changes in total wages, average monthly employment, and average weekly wage for support activities for mining (NAICS 213) followed a similar trend as Wyoming's overall employment and wage levels (see the Figure on page

30). However, the peaks and troughs for support activities for mining were much greater. For example, total wages for this subsector increased over prior year levels as much as 45.4% (2006Q1) during the period of rapid economic expansion and decreased by approximately 38% for two quarters (2009Q3 and 2009Q4) during the previous downturn. During the most recent downturn, the over-the-year decline in total wages was much greater in 2015Q3 for support activities for mining (-36.5%) than it was for the statewide average (-2.5%).

Figure 2 shows that over-the-year changes in Wyoming's private coal mining industry group (NAICS 2121) were much

(p)Preliminary.
*North American Industry Classification System.
Source: Quarterly Census of Employment and Wages.
Note: Gray boxes indicate two periods of economic downturn in Wyoming: 2009Q1-2010Q1 and 2015Q2-2015Q3.
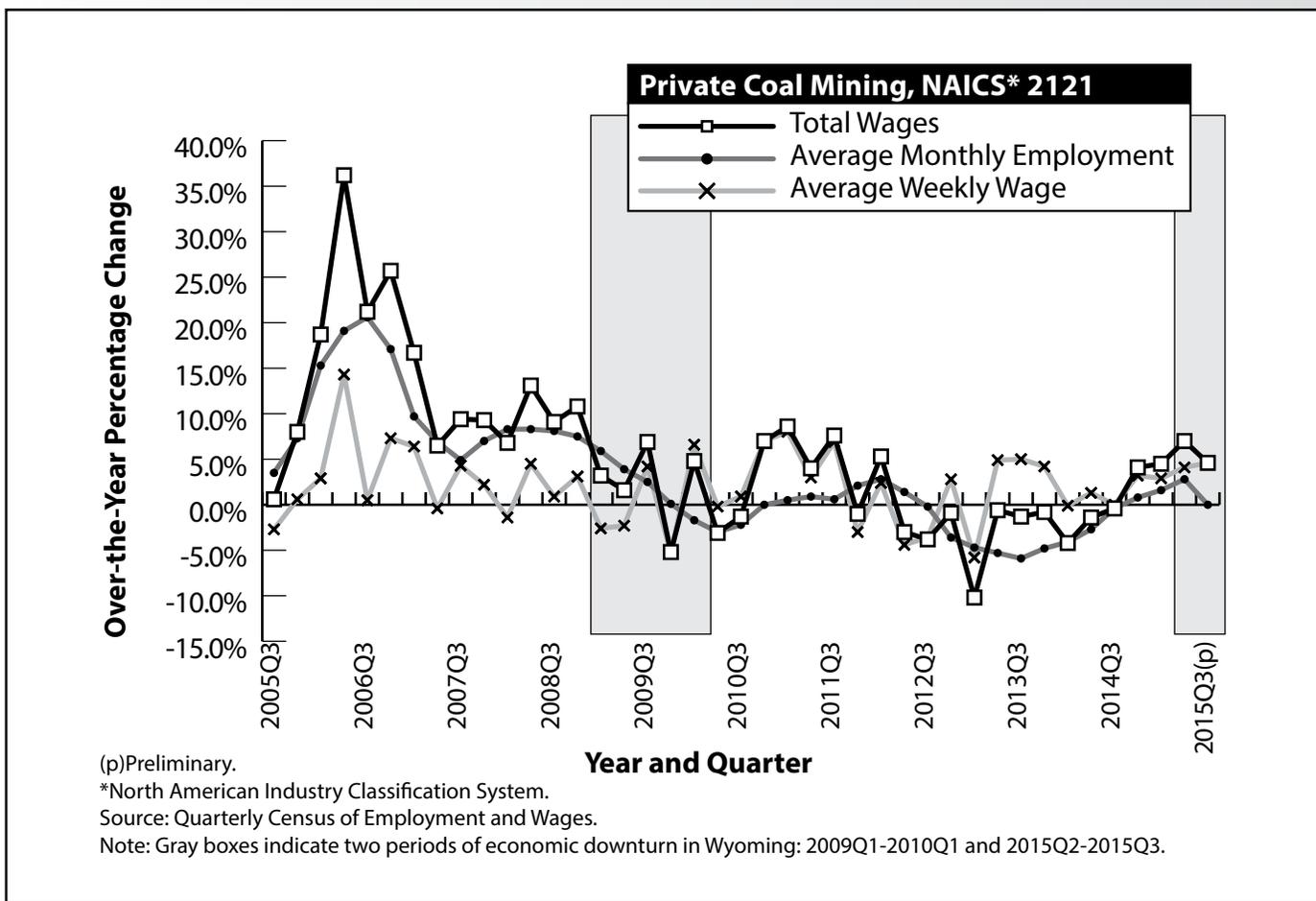
Figure 2: **Over-the-Year Percentage Change for Total Wages, Average Monthly Employment, and Average Weekly Wage in Private Industry Coal Mining (NAICS 2121) in Wyoming by Year/Quarter, 2005Q3-2015Q3**

different from the statewide average. Total wage growth occurred during each quarter of the economic expansion from 2005Q3 to 2008Q4, but has fluctuated ever since. Private coal mining experienced over-the-year growth in employment even well into the previous downturn, but then experienced 10 consecutive quarters of decline from 2012Q2 to 2014Q3. Figure 2 shows that the coal mining industry group experienced an increase in total wages and average weekly wage during the most recent downturn, even when most industries experienced a decrease.

Construction (NAICS 23)

Employment and wage levels in

Wyoming's construction industry are highly seasonal, usually peaking in the summer months (second and third quarters). As shown in Figure 3, total wages increased rapidly during the period of economic expansion, with a peak over-the-year increase of 34.8% in 2008Q1. The over-the-year decrease in average monthly employment in construction preceded the previous downturn by one quarter (-1.1% in 2008Q4). In 2009Q1 (the first quarter of the previous downturn), Wyoming's construction industry experienced a much greater over-the-year decline in total wages (-21.0%) than the statewide average (-1.2%). Wyoming's construction industry continued to experience over-the-year decreases in employment and wage levels for several
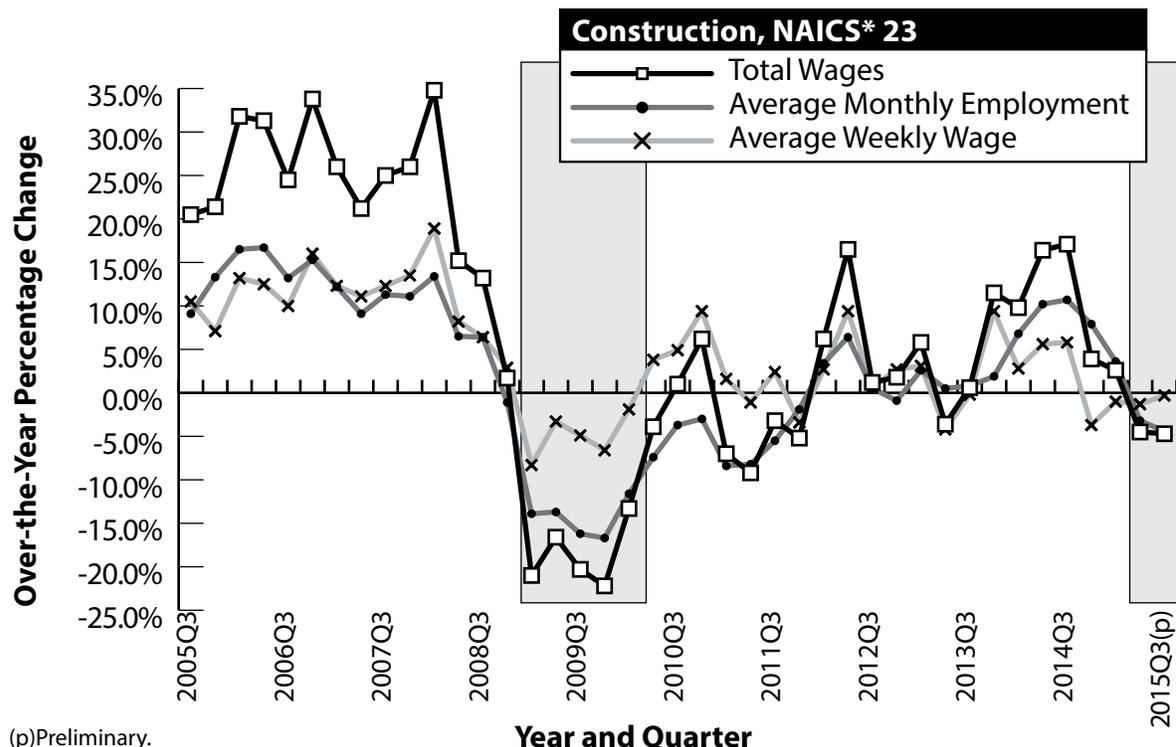
Figure 3: **Over-the-Year Percentage Change for Total Wages, Average Monthly Employment, and Average Weekly Wage in Construction (NAICS 23) in Wyoming by Year/Quarter, 2005Q3-2015Q3**

quarters after the end of the previous downturn: average monthly employment declined from previous year levels during every quarter from 2008Q1 to 2011Q4, and over-the-year changes in wages fluctuated between positive and negative throughout the same period. The construction industry showed employment and wage growth from 2012Q1 to 2015Q1, and then experienced an over-the-year decline in 2015Q2 and 2015Q3.

Educational & Health Services (NAICS 61 & 62)

Education & health services is a supersector industry comprised of educational services (NAICS 61) and health care & social assistance (NAICS 62). As explained by R&P (in press), "the population of the state is a large driver of health care employment; more people, especially older people, increase the demand for health care." As shown in Figure 4, total wages and average monthly employment in educational & health services continued to increase even during the previous economic downturn. Even as Wyoming's economy was contracting, health care & social assistance employers were still increasing the net number of jobs. This can also be seen during the

(p)Preliminary.
*North American Industry Classification System. Education & Health Services is a supersector industry comprised of Educational Services (NAICS 61) and Health Care & Social Assistance (NAICS 62).
Source: Quarterly Census of Employment and Wages.
Note: Gray boxes indicate two periods of economic downturn in Wyoming: 2009Q1-2010Q1 and 2015Q2-2015Q3.
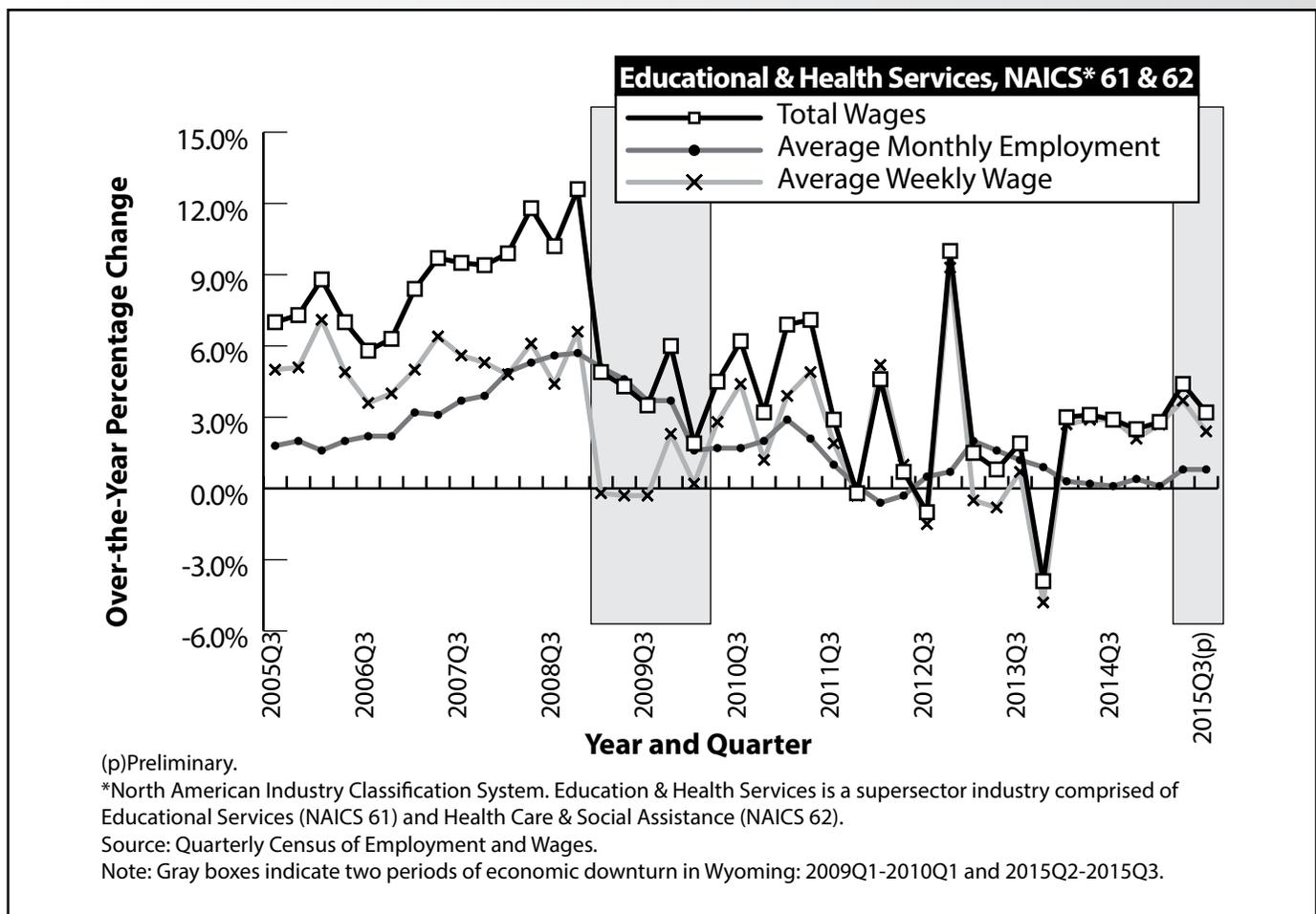
Figure 4: **Over-the-Year Percentage Change for Total Wages, Average Monthly Employment, and Average Weekly Wage in Support for Education & Health Services Industry Supersector (NAICS 61 & 62) in Wyoming by Year/Quarter, 2005Q3-2015Q3**

most recent downturn, as total wages and average monthly employment grew from prior year levels in 2015Q2 and 2015Q3.

Conclusion

The circumstances surrounding the previous economic downturn and the most recent one are quite different. Wyoming's previous economic downturn was preceded by the U.S. Great Recession, which lasted from December 2007 to June 2009 (NBER, 2010). By the time Wyoming's economic downturn began in 2009Q1, most surrounding states had already experienced several quarters of decline in employment and wage levels. However, since 2012, most of the surrounding states experienced a greater rate of over-the-year growth in employment. Over-the-year employment growth for Colorado and Utah was around 3% and 4%, respectively, in

2015Q2, while Wyoming's employment declined by 0.5% from 2014Q2 (see Figure 5). Employment and wage data for surrounding states for 2015Q3 were not available to R&P at the time this article was published.

Given the contraction of Wyoming's economy and continued employment growth in surrounding states, it is entirely possible that displaced Wyoming workers may seek employment in states such as Colorado, Montana, and Utah. R&P will continue to monitor and publish quarterly wage and employment estimates in *Wyoming Labor Force Trends* and online at http://doe.state.wy.us/LMI/toc_202.htm.

References

Bullard, D. (2013). Local jobs and payroll in Wyoming: Construction continues to grow in 2012Q2. *Wyoming Labor Force Trends, 50*(1). Retrieved February 18, 2016, from http://doe.state.wy.us/LMI/trends/0113/qcew.htm

Bureau of Labor Statistics, U.S. Department of Labor. (2014). North American Industry Classification System (NAICS) at BLS. Retrieved February 12, 2016, from http://www.bls.gov/bls/naics.htm

National Bureau of Economic Research. (2010). Retrieved February 12, 2016, from http://www.nber.org/cycles/sept2010.html

Research & Planning, Wyoming Department of Workforce Services. (In press). Wyoming Workforce Innovation and Opportunity Act (WIOA) Unified Plan. Retrieved February 5, 2016.

Source: Quarterly Census of Employment and Wages (QCEW), U.S. Bureau of Labor Statistics. 2015Q2 data for surrounding states are preliminary and were the most current data at the time of publication.
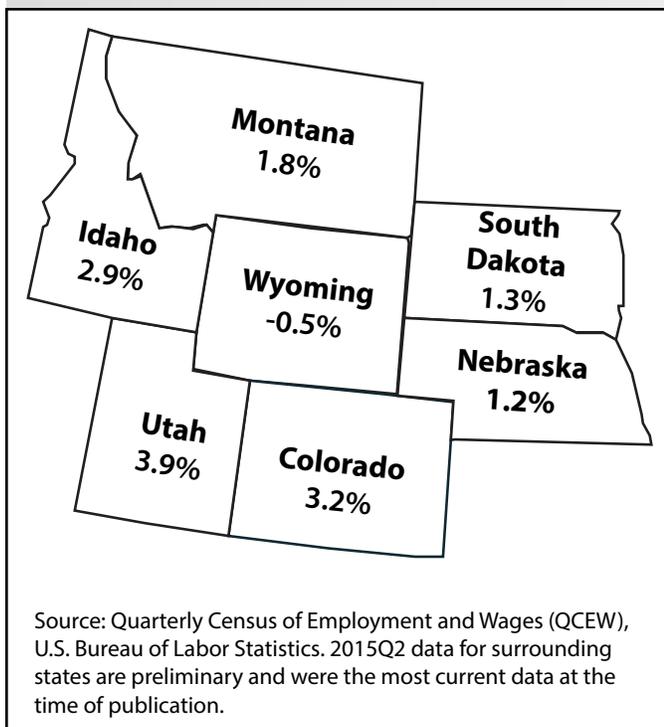
Figure 5: Over-the-Year Percentage Change in Average Monthly Employment for Wyoming and Surrounding States, 2014Q2 to 2015Q2

Total Wages, Average Monthly Employment, and Average Monthly Wage Changes for Wyoming by Year/Quarter: 2005Q3 to 2015Q3

Year/Quarter	Total Wages	% Change	Avg. Monthly Employment	% Change	Avg. Monthly Wage	% Change
2005Q3	$2,188,006,458		263,747		$2,765.28	
2006Q3	$2,511,603,105	14.8%	274,060	3.9%	$3,054.81	10.5%
2005Q4	$2,283,976,604		259,256		$2,936.58	
2006Q4	$2,674,775,271	17.1%	270,498	4.3%	$3,296.11	12.2%
2006Q1	$2,206,882,734		254,302		$2,892.73	
2007Q1	$2,528,871,913	14.6%	266,599	4.8%	$3,161.89	9.3%
2006Q2	$2,389,394,775		268,726		$2,963.86	
2007Q2	$2,679,641,341	12.1%	278,792	3.7%	$3,203.87	8.1%
2006Q3	$2,511,603,105		274,060		$3,054.81	
2007Q3	$2,712,325,140	8.0%	284,317	3.7%	$3,179.93	4.1%
2006Q4	$2,674,775,271		270,498		$3,296.11	
2007Q4	$2,976,397,551	11.3%	280,888	3.8%	$3,532.13	7.2%
2007Q1	$2,528,871,913		266,599		$3,161.89	
2008Q1	$2,798,237,273	10.7%	276,195	3.6%	$3,377.13	6.8%
2007Q2	$2,679,641,341		278,792		$3,203.87	
2008Q2	$2,918,008,721	8.9%	287,780	3.2%	$3,379.91	5.5%
2007Q3	$2,712,325,140		284,317		$3,179.93	
2008Q3	$2,985,771,294	10.1%	293,895	3.4%	$3,386.44	6.5%
2007Q4	$2,976,397,551		280,888		$3,532.13	
2008Q4	$3,177,223,682	6.7%	287,478	2.3%	$3,684.02	4.3%
2008Q1	$2,798,237,273		276,195		$3,377.13	
2009Q1	$2,764,364,307	-1.2%	273,471	-1.0%	$3,369.48	-0.2%
2008Q2	$2,918,008,721		287,780		$3,379.91	
2009Q2	$2,773,191,493	-5.0%	277,897	-3.4%	$3,326.40	-1.6%
2008Q3	$2,985,771,294		293,895		$3,386.44	
2009Q3	$2,736,056,780	-8.4%	278,234	-5.3%	$3,277.88	-3.2%
2008Q4	$3,177,223,682		287,478		$3,684.02	
2009Q4	$2,911,594,084	-8.4%	269,439	-6.3%	$3,602.04	-2.2%
2009Q1	$2,764,364,307		273,471		$3,369.48	
2010Q1	$2,627,558,836	-4.9%	260,726	-4.7%	$3,359.29	-0.3%
2009Q2	$2,773,191,493		277,897		$3,326.40	
2010Q2	$2,802,848,365	1.1%	273,044	-1.7%	$3,421.73	2.9%
2009Q3	$2,736,056,780		278,234		$3,277.88	
2010Q3	$2,866,694,334	4.8%	279,429	0.4%	$3,419.71	4.3%
2009Q4	$2,911,594,084		269,439		$3,602.04	
2010Q4	$3,087,069,661	6.0%	272,511	1.1%	$3,776.08	4.8%
2010Q1	$2,627,558,836		260,726		$3,359.29	
2011Q1	$2,769,072,169	5.4%	263,558	1.1%	$3,502.17	4.3%
2010Q2	$2,802,848,365		273,044		$3,421.73	
2011Q2	$2,933,492,659	4.7%	275,169	0.8%	$3,553.56	3.9%
2010Q3	$2,866,694,334		279,429		$3,419.71	
2011Q3	$3,053,914,162	6.5%	282,231	1.0%	$3,606.87	5.5%
2010Q4	$3,087,069,661		272,511		$3,776.08	
2011Q4	$3,165,745,021	2.5%	278,015	2.0%	$3,795.65	0.5%
2011Q1	$2,769,072,169		263,558		$3,502.17	
2012Q1	$2,991,246,352	8.0%	270,073	2.5%	$3,691.90	5.4%
2011Q2	$2,933,492,659		275,169		$3,553.56	
2012Q2	$3,074,207,136	4.8%	281,192	2.2%	$3,644.26	2.6%
2011Q3	$3,053,914,162		282,231		$3,606.87	
2012Q3	$3,060,122,560	0.2%	284,180	0.7%	$3,589.42	-0.5%
2011Q4	$3,165,745,021		278,015		$3,795.65	
2012Q4	$3,294,064,060	4.1%	278,934	0.3%	$3,936.49	3.7%
2012Q1	$2,991,246,352		270,073		$3,691.90	
2013Q1	$3,024,233,488	1.1%	270,881	0.3%	$3,721.48	0.8%
2012Q2	$3,074,207,136		281,192		$3,644.26	
2013Q2	$3,093,096,086	0.6%	281,707	0.2%	$3,659.94	0.4%

(Table continued from page 29)

Total Wages, Average Monthly Employment, and Average Monthly Wage Changes for Wyoming by Year/Quarter: 2005Q3 to 2015Q3

Year/Quarter	Total Wages	% Change	Avg. Monthly Employment	% Change	Avg. Monthly Wage	% Change
2012Q3	$3,060,122,560		284,180		$3,589.42	
2013Q3	$3,119,244,931	1.9%	285,726	0.5%	$3,638.97	1.4%
2012Q4	$3,294,064,060		278,934		$3,936.49	
2013Q4	$3,344,359,716	1.5%	280,701	0.6%	$3,971.44	0.9%
2013Q1	$3,024,233,488		270,881		$3,721.48	
2014Q1	$3,124,158,426	3.3%	274,050	1.2%	$3,799.99	2.1%
2013Q2	$3,093,096,086		281,707		$3,659.94	
2014Q2	$3,243,373,986	4.9%	286,669	1.8%	$3,771.33	3.0%
2013Q3	$3,119,244,931		285,726		$3,638.97	
2014Q3	$3,317,475,865	6.4%	291,299	2.0%	$3,796.19	4.3%
2013Q4	$3,344,359,716		280,701		$3,971.44	
2014Q4	$3,536,857,567	5.8%	285,540	1.7%	$4,128.85	4.0%
2014Q1	$3,124,158,426		274,050		$3,799.99	
2015Q1	$3,218,193,073	3.0%	277,691	1.3%	$3,863.04	1.7%
2014Q2	$3,243,373,986		286,669		$3,771.33	
2015Q2	$3,219,023,155	-0.8%	285,186	-0.5%	$3,762.48	-0.2%
2014Q3	$3,317,475,865		291,299		$3,796.19	
2015Q3(p)	$3,235,735,394	-2.5%	287,559	-1.3%	$3,750.81	-1.2%

(p) Preliminary.
Source: Quarterly Census of Employment and Wages.
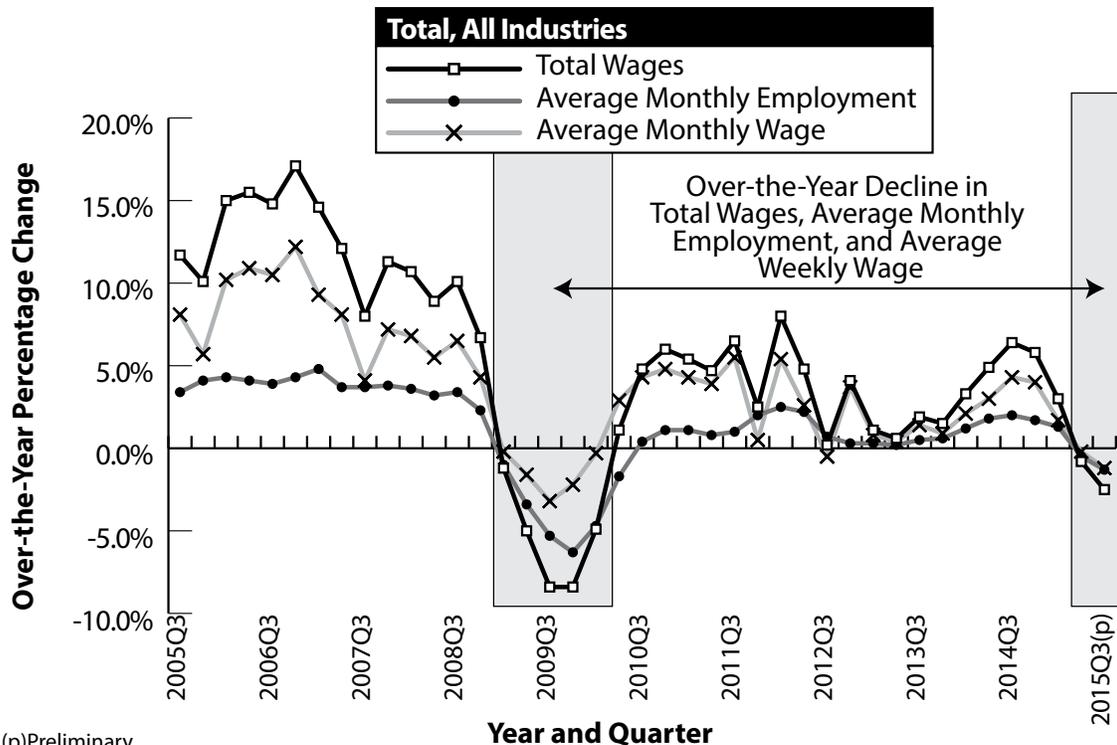
Figure: Over-the-Year Percentage Change for Total Wages, Average Monthly Employment, and Average Monthly Wage Across All Industries in Wyoming by Year and Quarter, 2005Q3 to 2015Q3

Quarterly Turnover Statistics by Industry, Second Quarter 2015

In Wyoming's mining sector, the number of exits (3,804) was more than double the number of hires (1,482) in 2015Q2.

Major Sector Industry		(H) Hire Only	(H)+(B) Total Hires	(B) Both Hire and Exit	(E) Exit Only	(E)+(B) Total Exits	(C) Continuous Employment	(H+E+B+C) Total	Turnover Rate[a]	Change Prior Year
Goods Producing — Agriculture, Forestry, Fishing, & Hunting	Transactions[b]	792	1,064	272	256	528	2,112	3,432	38.5	-0.6
	Rates	23.1	31.0	7.9	7.5	15.4	61.5	100.0		
Mining	Transactions	1,482	1,994	512	3,804	4,316	19,884	25,682	22.6	0.8
	Rates	5.8	7.8	2.0	14.8	16.8	77.4	100.0		
Construction	Transactions	5,709	9,152	3,443	4,170	7,613	17,941	31,263	42.6	-3.8
	Rates	18.3	29.3	11.0	13.3	24.4	57.4	100.0		
Manufacturing	Transactions	1,040	1,273	233	1,013	1,246	8,284	10,570	21.6	0.1
	Rates	9.8	12.0	2.2	9.6	11.8	78.4	100.0		
Wholesale Trade, Transp., Utilities, & Warehousing	Transactions	2,327	3,043	716	2,392	3,108	18,932	24,367	22.3	-3.0
	Rates	9.5	12.5	2.9	9.8	12.8	77.7	100.0		
Service Providing — Retail Trade	Transactions	6,990	9,434	2,444	5,923	8,367	25,228	40,585	37.8	0.0
	Rates	17.2	23.2	6.0	14.6	20.6	62.2	100.0		
Information	Transactions	467	572	105	422	527	3,876	4,870	20.4	1.7
	Rates	9.6	11.7	2.2	8.7	10.8	79.6	100.0		
Financial Activities	Transactions	1,091	1,378	287	1,236	1,523	9,873	12,487	20.9	-0.3
	Rates	8.7	11.0	2.3	9.9	12.2	79.1	100.0		
Professional & Business Services	Transactions	4,179	6,585	2,406	2,993	5,399	14,434	24,012	39.9	0.3
	Rates	17.4	27.4	10.0	12.5	22.5	60.1	100.0		
Educational Services	Transactions	1,941	3,192	1,251	3,697	4,948	26,391	33,280	20.7	-2.0
	Rates	5.8	9.6	3.8	11.1	14.9	79.3	100.0		
Health Services	Transactions	3,635	4,486	851	3,580	4,431	28,954	37,020	21.8	-1.2
	Rates	9.8	12.1	2.3	9.7	12.0	78.2	100.0		
Leisure & Hospitality	Transactions	15,061	20,632	5,571	8,416	13,987	23,056	52,104	55.8	-0.7
	Rates	28.9	39.6	10.7	16.2	26.8	44.2	100.0		
Other Services	Transactions	1,306	1,783	477	1,140	1,617	6,390	9,313	31.4	-0.7
	Rates	14.0	19.1	5.1	12.2	17.4	68.6	100.0		
Public Admin.	Transactions	2,803	3,213	410	1,465	1,875	16,925	21,603	21.7	0.5
	Rates	13.0	14.9	1.9	6.8	8.7	78.3	100.0		
Unclassified	Transactions	1,529	2,778	1,249	846	2,095	2,724	6,348	57.1	-2.9
	Rates	24.1	43.8	19.7	13.3	33.0	42.9	100.0		
Total	**Transactions**	**50,352**	**70,579**	**20,227**	**41,353**	**61,580**	**225,004**	**336,936**	**33.2**	**-0.8**
	Rates	**14.9**	**20.9**	**6.0**	**12.3**	**18.3**	**66.8**	**100.0**		

(H) Hire Only. (B) Both Hire and Exit. (E) Exit Only. (C) Continuous Employment.
[a]Turnover rate equals (H+E+B)/Total.
[b]Jobs worked at any time during the quarter.
Historical turnover data can be found online at http://doe.state.wy.us/LMI/turnover.htm.

Persons Working in Jobs Covered by Wyoming State Unemployment Insurance, Third Quarter 2015

by: Tony Glover, Workforce Information Supervisor

The number of Unemployment Insurance (UI) records, persons working, total wages, and new persons working in Wyoming decreased from 2014Q3 to 2015Q3.

The number of new persons found working in Wyoming decreased 14.3% from third quarter 2014 to third quarter 2015.
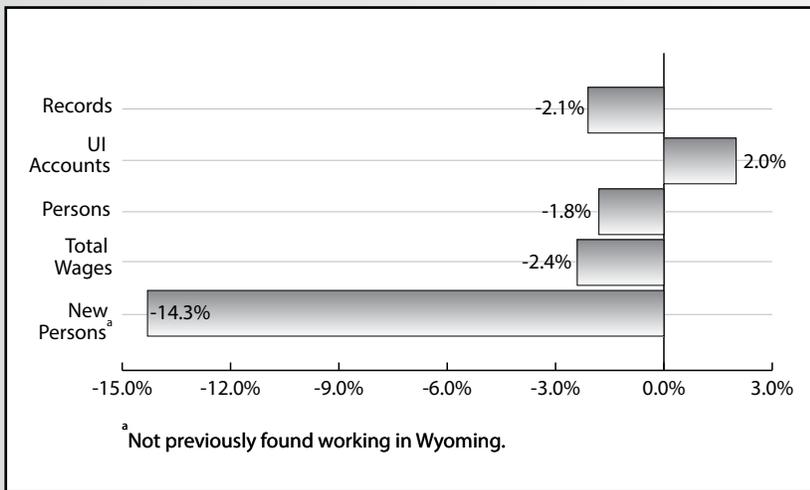
Figure 1: **Percentage Change from Previous Year, Wyoming Wage Records, Third Quarter 2015**

a Not previously found working in Wyoming.
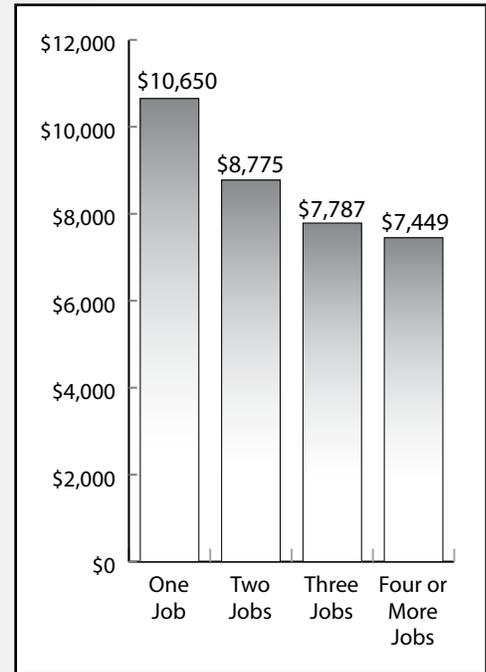
Figure 2: **Mean Quarterly Wages in Wyoming by Number of Jobs, Third Quarter 2015**
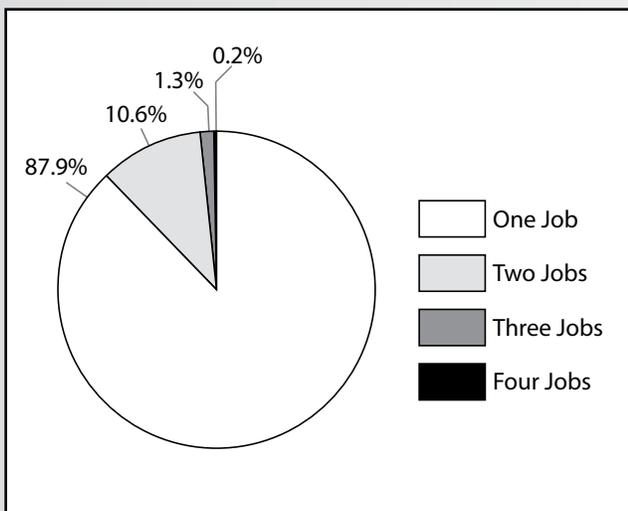
Figure 3: **Percentage of Total Persons by Number of Jobs Worked in Wyoming, Third Quarter 2015**
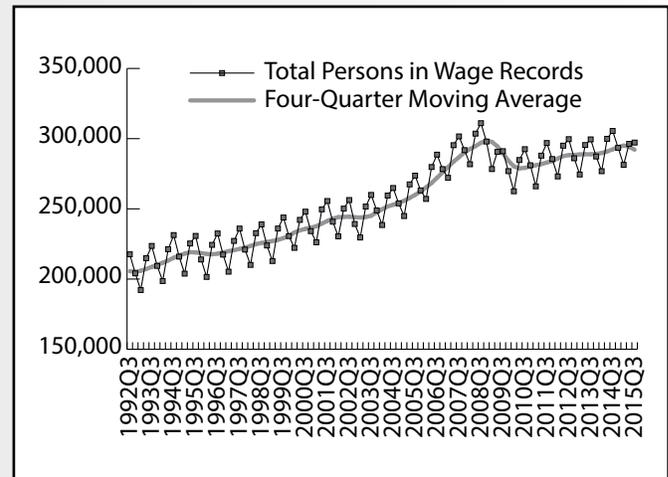
Figure 4: **Running Total of Persons in Wyoming Wage Records, Third Quarter 1992 (1992Q3) to Third Quarter 2015 (2015Q3)**

Wyoming Unemployment Rate Rises to 4.1% in November 2015
David Bullard, Senior Economist

The Research & Planning section of the Wyoming Department of Workforce Services reported that the state's seasonally adjusted[1] unemployment rate increased from 4.0% in October to 4.1% in November (not a statistically significant change). Wyoming's unemployment rate was slightly lower than its November 2014 level of 4.3% and significantly lower than the current U.S. unemployment rate of 5.0%. Seasonally adjusted employment of Wyoming residents decreased significantly, falling by an estimated 1,992 individuals (-0.7%) from October to November.

From October to November, most county unemployment rates followed their normal seasonal pattern and increased. The largest increases occurred in Teton (up from 3.7% to 6.7%), Park (up from 3.8% to 4.9%), and Fremont (up from 4.8% to 5.5%) counties. Unemployment usually rises in Teton County each November as

the summer tourist season has ended and the ski season has not begun.

From November 2014 to November 2015, unemployment rates rose in eight counties, fell in 14 counties, and remained unchanged in Hot Springs County. The largest increases were seen in Natrona (up from 4.2% to 5.1%), Sweetwater (up from 4.0% to 4.9%), Campbell (up from 3.5% to 4.0%), and Converse (up from 3.2% to 3.7%) counties. Unemployment rates fell in Teton (down from 8.3% to 6.7%), Laramie (down from 4.7% to 3.8%), Lincoln (down from 5.3% to 4.5%), and Washakie (down from 4.5% to 3.8%) counties.

The highest unemployment rates were found in Teton (6.7%), Fremont (5.5%), and Natrona (5.1%) counties. Albany and Niobrara counties posted the lowest unemployment rates (both 2.9%). They were followed by Weston (3.0%), Goshen (3.1%), and Crook (3.5%) counties.

Total nonfarm employment (measured by place of work) fell slightly from 290,800 in November 2014 to 288,600 in November 2015, a decrease of 2,200 jobs (or 0.8%; not a statistically significant change).

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1   Seasonal adjustment is a statistical procedure to remove the impact of normal regularly recurring events (such as weather, major holidays, and the opening and closing of schools) from economic time series to better understand changes in economic conditions from month to month.

Seasonally Adjusted Unemployment Rate

(r) Revised.
(p) Preliminary.
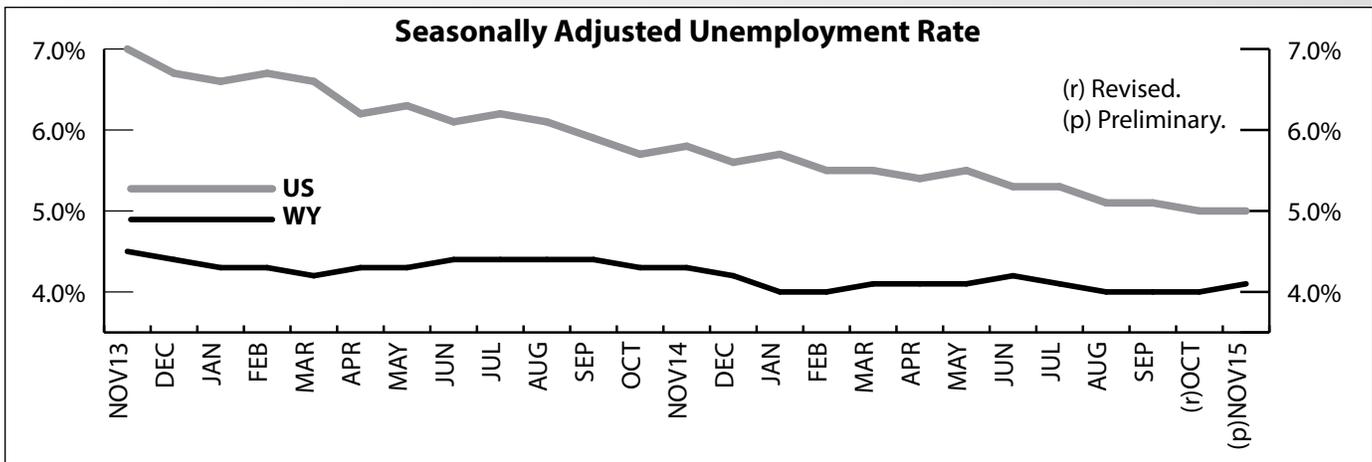
Current Employment Statistics (CES) Estimates and Research & Planning's Short-Term Projections, November 2015

by: David Bullard, Senior Economist

Industry Sector	Research & Planning's Short-Term Projections	Current Employment Statistics (CES) Estimates	N Difference	% Difference
Total Nonfarm	285,348	288,600	3,252	1.1%
Natural Resources & Mining	21,553	22,600	1,047	4.6%
Construction	23,067	24,500	1,433	5.8%
Manufacturing	10,061	10,000	-61	-0.6%
Wholesale Trade	9,386	9,000	-386	-4.3%
Retail Trade	30,891	30,200	-691	-2.3%
Transportation & Utilities	15,625	15,700	75	0.5%
Information	3,759	3,700	-59	-1.6%
Financial Activities	10,930	11,800	870	7.4%
Professional & Business Services	18,324	18,600	276	1.5%
Educational & Health Services	27,468	28,100	632	2.2%
Leisure & Hospitality	32,466	31,400	-1,066	-3.4%
Other Services	9,709	9,800	91	0.9%
Government	72,109	73,200	1,091	1.5%

Projections were run in October 2015 and based on QCEW data through June 2015.

Nonagricultural Employment Growth (Percentage Change Over Previous Year)

Wyoming Nonagricultural Wage and Salary Employment

**State Unemployment Rates
November 2015
Seasonally Adjusted**

State	Unemp. Rate
Puerto Rico	12.2
New Mexico	6.7
District of Columbia	6.6
Alaska	6.5
Mississippi	6.4
Nevada	6.4
West Virginia	6.3
Alabama	6.2
Louisiana	6.1
Illinois	5.9
Arizona	5.8
California	5.8
North Carolina	5.6
Tennessee	5.6
Georgia	5.5
South Carolina	5.5
Washington	5.5
Oregon	5.4
Kentucky	5.3
Connecticut	5.2
Maryland	5.1
Michigan	5.1
New Jersey	5.1
Rhode Island	5.1
Delaware	5.0
Florida	5.0
United States	**5.0**
Arkansas	4.8
New York	4.8
Pennsylvania	4.8
Massachusetts	4.7
Ohio	4.7
Texas	4.7
Indiana	4.4
Missouri	4.4
Wisconsin	4.3
Wyoming	**4.1**
Virginia	4.2
Oklahoma	4.1
Maine	4.0
Montana	4.0
Idaho	3.9
Kansas	3.9
Vermont	3.6
Colorado	3.5
Minnesota	3.5
Utah	3.5
Iowa	3.4
Hawaii	3.2
New Hampshire	3.1
Nebraska	2.9
South Dakota	2.9
North Dakota	2.7

Wyoming Nonagricultural Wage and Salary Employment
by: David Bullard, Senior Economist

	Employment in Thousands			Percent Change Total Employment	
	Nov 2015	Oct 2015	Nov 2014	Oct 2015 Nov 2015	Nov 2014 Nov 2015
CAMPBELL COUNTY					
TOTAL NONAG. WAGE & SALARY EMPLOYMENT	**28.3**	**28.5**	**29.4**	**-0.7**	**-3.7**
TOTAL PRIVATE	**23.0**	**23.2**	**24.2**	**-0.9**	**-5.0**
GOODS PRODUCING	**10.4**	**10.6**	**11.4**	**-1.9**	**-8.8**
Natural Resources & Mining	7.2	7.3	8.3	-1.4	-13.3
Construction	2.6	2.7	2.5	-3.7	4.0
Manufacturing	0.6	0.6	0.6	0.0	0.0
SERVICE PROVIDING	**17.9**	**17.9**	**18.0**	**0.0**	**-0.6**
Trade, Transportation, & Utilities	5.8	5.8	5.8	0.0	0.0
Information	0.2	0.2	0.2	0.0	0.0
Financial Activities	0.7	0.7	0.7	0.0	0.0
Professional & Business Services	1.6	1.6	1.7	0.0	-5.9
Educational & Health Services	1.1	1.1	1.1	0.0	0.0
Leisure & Hospitality	2.4	2.4	2.4	0.0	0.0
Other Services	0.8	0.8	0.9	0.0	-11.1
GOVERNMENT	**5.3**	**5.3**	**5.2**	**0.0**	**1.9**

	Employment in Thousands			Percent Change Total Employment	
	Nov 2015	Oct 2015	Nov 2014	Oct 2015 Nov 2015	Nov 2014 Nov 2015
SWEETWATER COUNTY					
TOTAL NONAG. WAGE & SALARY EMPLOYMENT	**24.2**	**24.4**	**25.0**	**-0.8**	**-3.2**
TOTAL PRIVATE	**19.3**	**19.5**	**20.2**	**-1.0**	**-4.5**
GOODS PRODUCING	**7.8**	**7.9**	**8.5**	**-1.3**	**-8.2**
Natural Resources & Mining	4.9	4.9	5.5	0.0	-10.9
Construction	1.6	1.7	1.6	-5.9	0.0
Manufacturing	1.3	1.3	1.4	0.0	-7.1
SERVICE PROVIDING	**16.4**	**16.5**	**16.5**	**-0.6**	**-0.6**
Trade, Transportation, & Utilities	5.1	5.1	5.1	0.0	0.0
Information	0.2	0.2	0.2	0.0	0.0
Financial Activities	0.9	0.9	0.9	0.0	0.0
Professional & Business Services	1.0	1.0	1.1	0.0	-9.1
Educational & Health Services	1.3	1.3	1.3	0.0	0.0
Leisure & Hospitality	2.4	2.4	2.4	0.0	0.0
Other Services	0.6	0.7	0.7	-14.3	-14.3
GOVERNMENT	**4.9**	**4.9**	**4.8**	**0.0**	**2.1**

	Employment in Thousands			Percent Change Total Employment	
	Nov 2015	Oct 2015	Nov 2014	Oct 2015 Nov 2015	Nov 2014 Nov 2015
TETON COUNTY					
TOTAL NONAG. WAGE & SALARY EMPLOYMENT	**16.3**	**19.2**	**15.7**	**-15.1**	**3.8**
TOTAL PRIVATE	**13.9**	**16.7**	**13.3**	**-16.8**	**4.5**
GOODS PRODUCING	**2.3**	**2.3**	**2.1**	**0.0**	**9.5**
Natural Resources, Mining & Construction	2.1	2.1	2.0	0.0	5.0
Manufacturing	0.2	0.2	0.1	0.0	100.0
SERVICE PROVIDING	**14.0**	**16.9**	**13.6**	**-17.2**	**2.9**
Trade, Transportation, & Utilities	2.5	2.7	2.3	-7.4	8.7
Information	0.2	0.2	0.2	0.0	0.0
Financial Activities	0.8	0.9	0.9	-11.1	-11.1
Professional & Business Services	1.8	1.9	1.8	-5.3	0.0
Educational & Health Services	1.1	1.1	1.1	0.0	0.0
Leisure & Hospitality	4.7	7.1	4.4	-33.8	6.8
Other Services	0.5	0.5	0.5	0.0	0.0
GOVERNMENT	**2.4**	**2.5**	**2.4**	**-4.0**	**0.0**

State Unemployment Rates
November 2015
Not Seasonally Adjusted

State	Unemp. Rate
Puerto Rico	10.4
Mississippi	7.2
Alaska	6.6
District of Columbia	6.3
New Mexico	6.2
Nevada	6.1
Illinois	5.9
Washington	5.9
West Virginia	5.9
Alabama	5.8
California	5.8
Arizona	5.5
Kentucky	5.5
North Carolina	5.3
South Carolina	5.3
Tennessee	5.3
Georgia	5.2
Oregon	5.2
Connecticut	5.0
Louisiana	5.0
Rhode Island	4.8
United States	**4.8**
Florida	4.7
New York	4.7
Arkansas	4.6
Indiana	4.6
Maryland	4.6
Massachusetts	4.6
Ohio	4.6
Michigan	4.5
Wyoming	**4.4**
New Jersey	4.4
Delaware	4.3
Montana	4.3
Texas	4.2
Wisconsin	4.2
Pennsylvania	4.1
Idaho	4.0
Missouri	4.0
Oklahoma	3.9
Virginia	3.9
Maine	3.8
Iowa	3.6
Kansas	3.6
Minnesota	3.6
Colorado	3.3
South Dakota	3.1
Utah	3.1
Vermont	3.1
Hawaii	2.9
New Hampshire	2.9
Nebraska	2.8
North Dakota	2.8

Economic Indicators

by: David Bullard, Senior Economist

Total nonfarm employment fell by 0.8% from November 2014 to November 2015.

	Nov 2015 (p)	Oct 2015 (r)	Nov 2014 (b)	Percent Change Month	Percent Change Year
Wyoming Total Nonfarm Employment	**288,600**	**294,200**	**290,800**	**-1.9**	**-0.8**
Wyoming State Government	16,100	16,200	15,900	-0.6	1.3
Laramie County Nonfarm Employment	47,600	47,600	47,000	0.0	1.3
Natrona County Nonfarm Employment	42,300	42,800	43,200	-1.2	-2.1
Selected U.S. Employment Data					
U.S. Multiple Jobholders	7,596,000	7,620,000	7,549,000	-0.3	0.6
As a percent of all workers	5.1%	5.1%	5.1%	N/A	N/A
U.S. Discouraged Workers	594,000	665,000	698,000	-10.7	-14.9
U.S. Part Time for Economic Reasons	5,967,000	5,536,000	6,713,000	7.8	-11.1
Wyoming Unemployment Insurance					
Weeks Compensated	17,063	13,757	12,446	24.0	37.1
Benefits Paid	$6,630,242	$5,508,549	$4,340,053	20.4	52.8
Average Weekly Benefit Payment	$388.57	$400.42	$348.71	-3.0	11.4
State Insured Covered Jobs[1]	275,785	279,937	271,685	-1.5	1.5
Insured Unemployment Rate	2.4%	1.9%	1.7%	N/A	N/A
Consumer Price Index (U) for All U.S. Urban Consumers					
(1982 to 1984 = 100)					
All Items	237.3	237.8	236.2	-0.2	0.5
Food & Beverages	247.9	248.6	244.9	-0.3	1.2
Housing	239.3	239.4	234.3	0.0	2.1
Apparel	127.0	129.4	129.0	-1.9	-1.5
Transportation	194.4	195.9	206.9	-0.7	-6.0
Medical Care	451.4	450.1	438.4	0.3	2.9
Recreation (Dec. 1997=100)	115.8	116.1	115.0	-0.3	0.6
Education & Communication (Dec. 1997=100)	139.5	139.3	137.7	0.1	1.3
Other Goods & Services	418.4	418.0	409.8	0.1	2.1
Producer Prices (1982 to 1984 = 100)					
All Commodities	185.9	187.7	200.9	-1.0	-7.5
Wyo. Bldg. Permits (New Privately Owned Housing Units Authorized)					
Total Units	123	127	107	-3.1	15.0
Valuation	$47,114,000	$37,630,000	$33,662,000	25.2	40.0
Single Family Homes	110	118	101	-6.8	8.9
Valuation	$46,249,000	$36,805,000	$33,148,000	25.7	39.5
Casper MSA[2] Building Permits	20	20	14	0.0	42.9
Valuation	$4,906,000	$3,267,000	$3,645,000	50.2	34.6
Cheyenne MSA Building Permits	22	24	14	-8.3	57.1
Valuation	$4,354,000	$4,789,000	$2,243,000	-9.1	94.1
Baker Hughes North American Rotary Rig Count for Wyoming	**22**	**25**	**61**	**-12.0**	**-63.9**

(p) Preliminary. (r) Revised. (b) Benchmarked.
[1]Local Area Unemployment Statistics Program estimates.
[2]Metropolitan Statistical Area.

Note: Production worker hours and earnings data have been dropped from the Economic Indicators page because of problems with accuracy due to a small sample size and high item nonresponse. The U.S. Bureau of Labor Statistics will continue to publish these data online at http://www.bls.gov/eag/eag.wy.htm.

Baker Hughes North American Rotary Rig Count for Wyoming
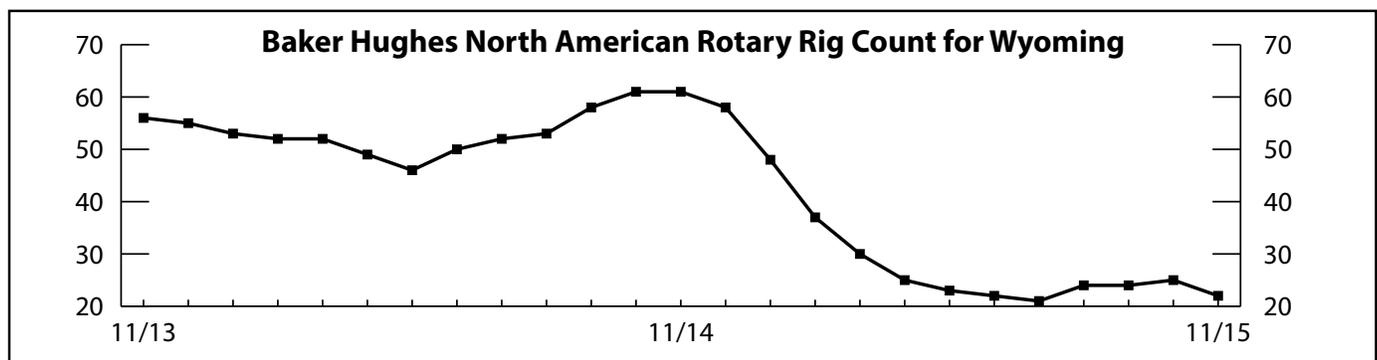
Wyoming County Unemployment Rates
by: Carola Cowan, BLS Programs Supervisor
From November 2014 to November 2015, unemployment rates fell in Teton, Laramie, Lincoln, and Washakie counties.

	Labor Force			Employed			Unemployed			Unemployment Rates		
REGION	Nov	Oct	Nov	Nov	Oct	Nov	Nov	Oct	Nov	Nov	Oct	Nov
County	2015	2015	2014	2015	2015	2014	2015	2015	2014	2015	2015	2014
	(p)	(r)	(b)	(p)	(r)	(b)	(p)	(r)	(b)	(p)	(r)	(b)
NORTHWEST	48,380	48,809	48,591	46,008	46,777	46,165	2,372	2,032	2,426	4.9	4.2	5.0
Big Horn	5,647	5,718	5,740	5,409	5,500	5,486	238	218	254	4.2	3.8	4.4
Fremont	20,797	20,672	20,767	19,662	19,680	19,693	1,135	992	1,074	5.5	4.8	5.2
Hot Springs	2,370	2,370	2,432	2,273	2,279	2,332	97	91	100	4.1	3.8	4.1
Park	15,172	15,656	15,267	14,436	15,068	14,466	736	588	801	4.9	3.8	5.2
Washakie	4,394	4,393	4,385	4,228	4,250	4,188	166	143	197	3.8	3.3	4.5
NORTHEAST	53,663	53,628	55,017	51,517	51,691	52,834	2,146	1,937	2,183	4.0	3.6	4.0
Campbell	25,828	25,679	26,748	24,782	24,726	25,820	1,046	953	928	4.0	3.7	3.5
Crook	3,658	3,679	3,722	3,529	3,569	3,583	129	110	139	3.5	3.0	3.7
Johnson	4,101	4,189	4,378	3,922	4,025	4,180	179	164	198	4.4	3.9	4.5
Sheridan	16,038	16,051	16,154	15,367	15,462	15,376	671	589	778	4.2	3.7	4.8
Weston	4,038	4,030	4,015	3,917	3,909	3,875	121	121	140	3.0	3.0	3.5
SOUTHWEST	58,623	60,111	59,098	55,545	57,580	55,976	3,078	2,531	3,122	5.3	4.2	5.3
Lincoln	8,289	8,543	8,040	7,920	8,201	7,614	369	342	426	4.5	4.0	5.3
Sublette	4,638	4,700	4,896	4,413	4,490	4,676	225	210	220	4.9	4.5	4.5
Sweetwater	22,900	22,772	23,283	21,786	21,772	22,345	1,114	1,000	938	4.9	4.4	4.0
Teton	13,000	14,339	13,027	12,124	13,803	11,943	876	536	1,084	6.7	3.7	8.3
Uinta	9,796	9,757	9,852	9,302	9,314	9,398	494	443	454	5.0	4.5	4.6
SOUTHEAST	84,719	84,134	84,201	81,762	81,354	80,679	2,957	2,780	3,522	3.5	3.3	4.2
Albany	21,987	21,839	21,399	21,349	21,237	20,650	638	602	749	2.9	2.8	3.5
Goshen	7,290	7,268	7,457	7,063	7,043	7,204	227	225	253	3.1	3.1	3.4
Laramie	49,274	48,798	49,302	47,426	47,066	47,007	1,848	1,732	2,295	3.8	3.5	4.7
Niobrara	1,321	1,350	1,348	1,283	1,312	1,303	38	38	45	2.9	2.8	3.3
Platte	4,847	4,879	4,695	4,641	4,696	4,515	206	183	180	4.3	3.8	3.8
CENTRAL	59,981	60,025	60,392	57,118	57,434	57,945	2,863	2,591	2,447	4.8	4.3	4.1
Carbon	8,421	8,556	8,285	8,089	8,260	7,937	332	296	348	3.9	3.5	4.2
Converse	8,403	8,390	8,448	8,089	8,110	8,178	314	280	270	3.7	3.3	3.2
Natrona	43,157	43,079	43,659	40,940	41,064	41,830	2,217	2,015	1,829	5.1	4.7	4.2
STATEWIDE	305,367	306,707	307,297	291,951	294,836	293,596	13,416	11,871	13,701	4.4	3.9	4.5

	Nov 2015	Oct 2015	Nov 2014
Statewide Seasonally Adjusted	4.1	4.0	4.3
U.S.	4.8	4.8	5.5
U.S. Seasonally Adjusted	5.0	5.0	5.8

Prepared in cooperation with the Bureau of Labor Statistics. Benchmarked 02/2015. Run Date 12/2015.

Data are not seasonally adjusted except where otherwise specified.

(p) Preliminary. (r) Revised. (b) Benchmarked.

Wyoming Normalized[a] Unemployment Insurance Statistics: Initial Claims

by: Patrick Manning, Principal Economist

While the net over-the-year change in initial claims remained relatively stable, there were large increases in mining (107.7%) and transportation, warehousing, & utilities (86.6%).

Initial Unemployment Insurance Claims by Industry, November 2015

Initial Unemployment Insurance Claims by County, November 2015
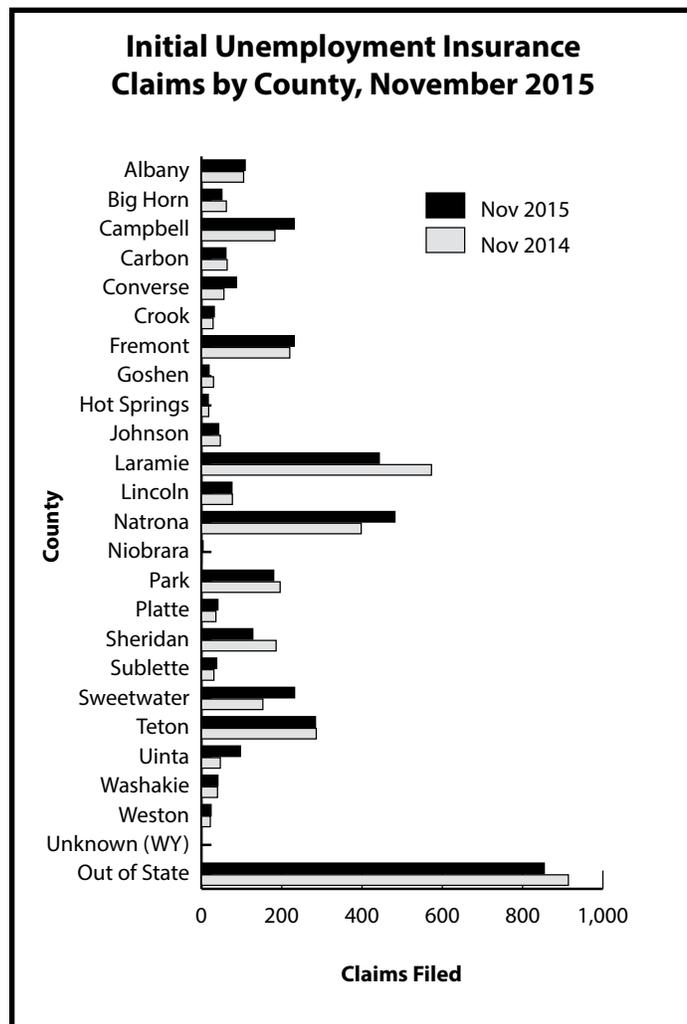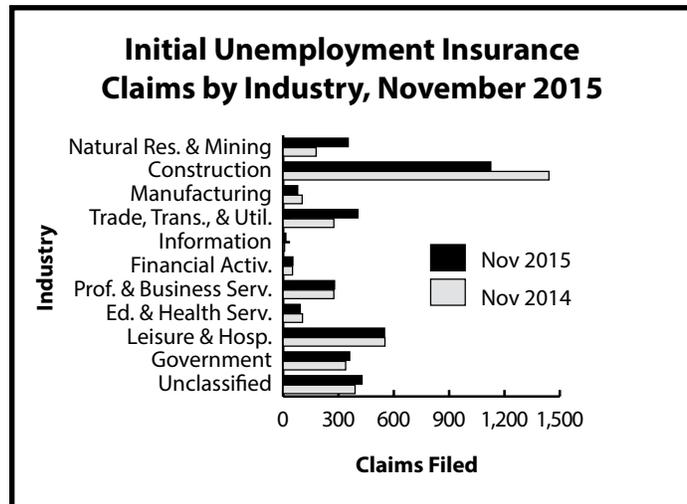
INITIAL CLAIMS	Claims Filed			% Change Claims Filed	
	Nov 15	Oct 15	Nov 14	Nov 15 Oct 15	Nov 15 Nov 14
Wyoming Statewide					
TOTAL CLAIMS FILED	**3,803**	**3,461**	**3,772**	**9.9**	**0.8**
TOTAL GOODS-PRODUCING	1,559	1,043	1,726	49.5	-9.7
Natural Res. & Mining	353	341	179	3.5	97.2
Mining	322	334	155	-3.6	107.7
Oil & Gas Extraction	70	37	12	89.2	483.3
Construction	1,126	576	1,441	95.5	-21.9
Manufacturing	79	124	103	-36.3	-23.3
TOTAL SERVICE-PROVIDING	1,453	1,868	1,315	-22.2	10.5
Trade, Transp., & Utilities	405	415	275	-2.4	47.3
Wholesale Trade	70	73	41	-4.1	70.7
Retail Trade	154	189	137	-18.5	12.4
Transp., Warehousing & Utilities	181	153	97	18.3	86.6
Information	15	14	8	7.1	87.5
Financial Activities	53	66	51	-19.7	3.9
Prof. & Business Svcs.	279	229	275	21.8	1.5
Educational & Health Svcs.	92	93	105	-1.1	-12.4
Leisure & Hospitality	550	994	552	-44.7	-0.4
Other Svcs., exc. Public Admin.	53	50	43	6.0	23.3
TOTAL GOVERNMENT	361	246	339	46.7	6.5
Federal Government	227	149	239	52.3	-5.0
State Government	27	18	18	50.0	50.0
Local Government	107	79	82	35.4	30.5
Local Education	12	17	10	-29.4	20.0
UNCLASSIFIED	428	303	390	41.3	9.7
Laramie County					
TOTAL CLAIMS FILED	**442**	**323**	**572**	**36.8**	**-22.7**
TOTAL GOODS-PRODUCING	235	126	389	86.5	-39.6
Construction	205	109	364	88.1	-43.7
TOTAL SERVICE-PROVIDING	159	165	140	-3.6	13.6
Trade, Transp., & Utilities	64	56	42	14.3	52.4
Financial Activities	7	17	8	-58.8	-12.5
Prof. & Business Svcs.	46	58	49	-20.7	-6.1
Educational & Health Svcs.	17	16	28	6.3	-39.3
Leisure & Hospitality	21	21	12	0.0	75.0
TOTAL GOVERNMENT	23	17	22	35.3	4.5
UNCLASSIFIED	23	14	19	64.3	21.1
Natrona County					
TOTAL CLAIMS FILED	**481**	**408**	**398**	**17.9**	**20.9**
TOTAL GOODS-PRODUCING	227	190	254	19.5	-10.6
Construction	160	71	225	125.4	-28.9
TOTAL SERVICE-PROVIDING	228	197	123	15.7	85.4
Trade, Transp., & Utilities	83	72	33	15.3	151.5
Financial Activities	15	18	7	-16.7	114.3
Prof. & Business Svcs.	57	28	35	103.6	62.9
Educational & Health Svcs.	15	17	19	-11.8	-21.1
Leisure & Hospitality	35	42	19	-16.7	84.2
TOTAL GOVERNMENT	8	10	9	-20.0	-11.1
UNCLASSIFIED	17	9	10	88.9	70.0

[a]An average month is considered 4.33 weeks. If a month has four weeks, the normalization factor is 1.0825. If the month has five weeks, the normalization factor is 0.866. The number of raw claims is multiplied by the normalization factor to achieve the normalized claims counts.

Wyoming Normalized[a] Unemployment Insurance Statistics: Continued Claims
by: Patrick Manning, Principal Economist

Over the year, the number of unique claimants with continued claims increased by 1,312 workers (25.7%). The total continued weeks claimed increased by 33.4%.

CONTINUED CLAIMS	Continued Weeks Claimed Nov 15	Oct 15	Nov 14	% Change Weeks Claimed Nov 15 Oct 15	Nov 15 Nov 14
Wyoming Statewide					
TOTAL WEEKS CLAIMED	**21,603**	**16,870**	**16,199**	**28.1**	**33.4**
TOTAL UNIQUE CLAIMANTS[b]	6,415	5,107	5,103	25.6	25.7
Benefit Exhaustions	396	402	246	-1.5	61.0
Benefit Exhaustion Rates	6.2%	7.9%	4.8%	-1.7%	1.4%
TOTAL GOODS-PRODUCING	7,265	6,335	4,164	14.7	74.5
Natural Res. & Mining	3,205	3,222	791	-0.5	305.2
Mining	3,124	3,184	663	-1.9	371.2
Oil & Gas Extraction	362	267	81	35.6	346.9
Construction	3,137	2,317	2,888	35.4	8.6
Manufacturing	923	794	483	16.2	91.1
TOTAL SERVICE-PROVIDING	10,749	7,729	8,648	39.1	24.3
Trade, Transp., & Utilities	2,952	2,561	1,617	15.3	82.6
Wholesale Trade	780	745	300	4.7	160.0
Retail Trade	1,114	904	741	23.2	50.3
Transp., Warehousing & Utilities	1,058	912	576	16.0	83.7
Information	146	147	68	-0.7	114.7
Financial Activities	553	539	422	2.6	31.0
Prof. & Business Services	1,622	1,349	1,309	20.2	23.9
Educational & Health Svcs.	993	1,009	790	-1.6	25.7
Leisure & Hospitality	4,087	1,725	4,131	136.9	-1.1
Other Svcs., exc. Public Admin.	388	390	304	-0.5	27.6
TOTAL GOVERNMENT	1,691	1,130	1,786	49.6	-5.3
Federal Government	759	286	889	165.4	-14.6
State Government	203	201	205	1.0	-1.0
Local Government	728	641	690	13.6	5.5
Local Education	199	182	138	9.3	44.2
UNCLASSIFIED	1,896	1,675	1,601	13.2	18.4
Laramie County					
TOTAL WEEKS CLAIMED	**1,819**	**1,614**	**1,950**	**12.7**	**-6.7**
TOTAL UNIQUE CLAIMANTS	**557**	**490**	**684**	**13.7**	**-18.6**
TOTAL GOODS-PRODUCING	558	429	758	30.1	-26.4
Construction	422	299	598	41.1	-29.4
TOTAL SERVICE-PROVIDING	996	927	881	7.4	13.1
Trade, Transp., & Utilities	318	287	214	10.8	48.6
Financial Activities	115	103	114	11.7	0.9
Prof. & Business Svcs.	295	254	295	16.1	0.0
Educational & Health Svcs.	172	176	171	-2.3	0.6
Leisure & Hospitality	97	81	89	19.8	9.0
TOTAL GOVERNMENT	179	174	240	2.9	-25.4
UNCLASSIFIED	84	82	70	2.4	20.0
Natrona County					
TOTAL WEEKS CLAIMED	**3,288**	**2,994**	**1,412**	**9.8**	**132.9**
TOTAL UNIQUE CLAIMANTS	**954**	**893**	**474**	**6.8**	**101.3**
TOTAL GOODS-PRODUCING	1,483	1,373	540	8.0	174.6
Construction	408	345	400	18.3	2.0
TOTAL SERVICE-PROVIDING	1,646	1,489	752	10.5	118.9
Trade, Transp., & Utilities	671	615	209	9.1	221.1
Financial Activities	142	119	47	19.3	202.1
Professional & Business Svcs.	254	235	180	8.1	41.1
Educational & Health Svcs.	182	189	144	-3.7	26.4
Leisure & Hospitality	264	182	99	45.1	166.7
TOTAL GOVERNMENT	82	56	64	46.4	28.1
UNCLASSIFIED	76	74	55	2.7	38.2
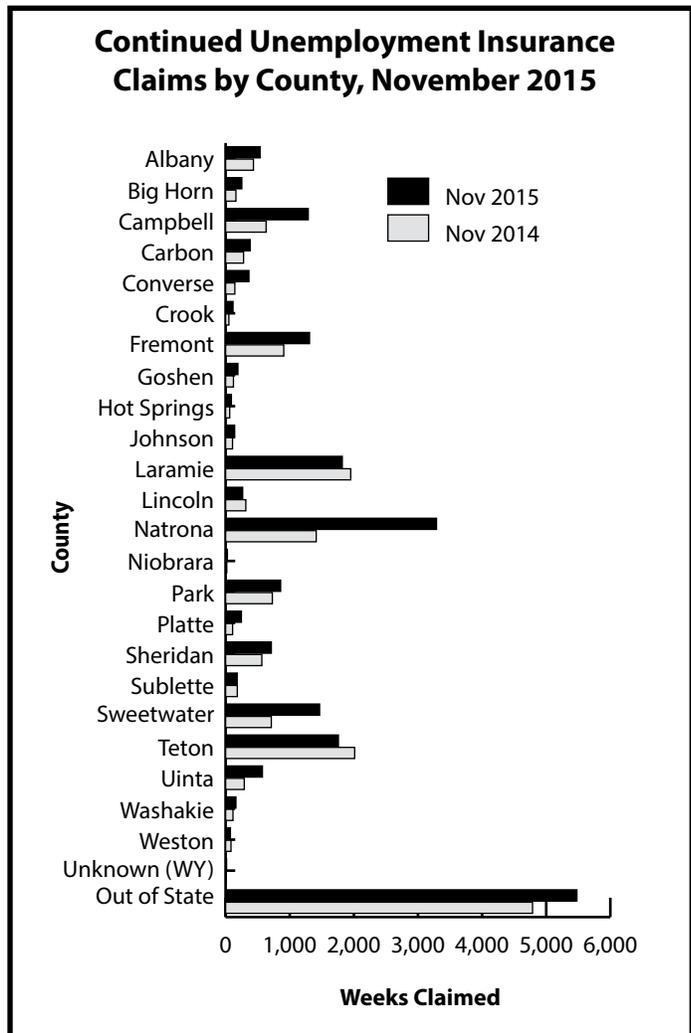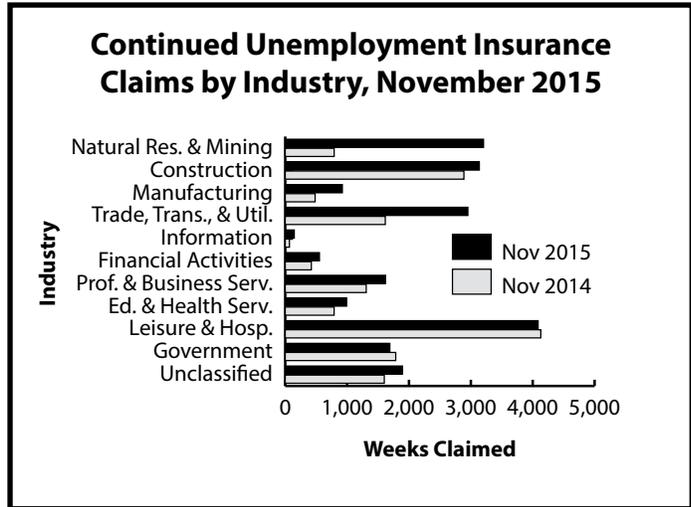
Continued Unemployment Insurance Claims by Industry, November 2015

Continued Unemployment Insurance Claims by County, November 2015

[a]An average month is considered 4.33 weeks. If a month has four weeks, the normalization factor is 1.0825. If the month has five weeks, the normalization factor is 0.866. The number of raw claims is multiplied by the normalization factor to achieve the normalized claims counts.
[b]Does not include claimants receiving extended benefits.