

Wyoming

# Using Labor Market Information to Inform Worker Training Efforts

Presented to the Wyoming Workforce  
and Safety Summit

June 26, 2014



Research & Planning  
Wyoming DWS

## Who We Are

### **OUR ORGANIZATION:**

R&P is a separate, exclusively statistical entity.

### **WHAT WE DO:**

R&P collects, analyzes, and publishes timely and accurate labor market information (LMI) meeting established statistical standards.

### **OUR CUSTOMERS:**

LMI makes the labor market more efficient by providing the public and the public's representatives with the basis for informed decision making.



Research & Planning  
Wyoming DWS

Wyoming

## Preparing Tomorrow's Workforce

“It is critical that the Federal Government ensure that its policies...are designed to equip the Nation's workers with skills matching the needs of employers looking to hire. *To achieve this goal, employers must identify the skills and credentials required for in-demand jobs...*”

\*Source: Presidential Memorandum, Job-Driven Training for Workers, *The Federal Gazette*, 2014

## Science Technology Engineering Math (STEM): How Many Workers Will We Need?

- STEM jobs make up an estimated 5.3% of jobs in the U.S., and an estimated 4.8% of jobs in Wyoming.
- Between 2010-2020, STEM jobs will grow at roughly the same rate for the U.S. and Wyoming: 17.4%
- We can expect to add an estimated 226 STEM jobs in Wyoming per year.
- Although STEM occupations make up a small percentage of the total jobs worked in Wyoming and the U.S., there are skills associated with STEM that are required in many other occupations.

# STEM: Skills Matter

<http://www.onetcenter.org>

## O\*NET Competencies Associated With STEM Occupations\*

### STEM Skills:

Mathematics  
Science  
**Critical Thinking**  
Active Learning  
Complex Problem Solving  
Operations Analysis  
**Technology Design**  
Equipment Selection  
Programming  
Quality Control Analysis  
Operations Monitoring  
**Operations and Control**  
Equipment Maintenance  
Troubleshooting  
Repairing  
Systems Analysis  
Systems Evaluation

### STEM Abilities:

Problem Sensitivity  
Deductive Reasoning  
Inductive Reasoning  
Mathematical Reasoning  
Perceptual Speed  
Control and Precision

### STEM Knowledge:

Production and Processing  
Computers and Electronics  
Engineering and Technology  
Design  
Building and Construction  
Mechanical  
Mathematics  
Physics  
Chemistry  
Biology

\*Source: Carnevale, et. al., (2014). *STEM State-Level Analysis*. Center on Education and the Workforce, Georgetown University.

## Defining Selected Job Skills

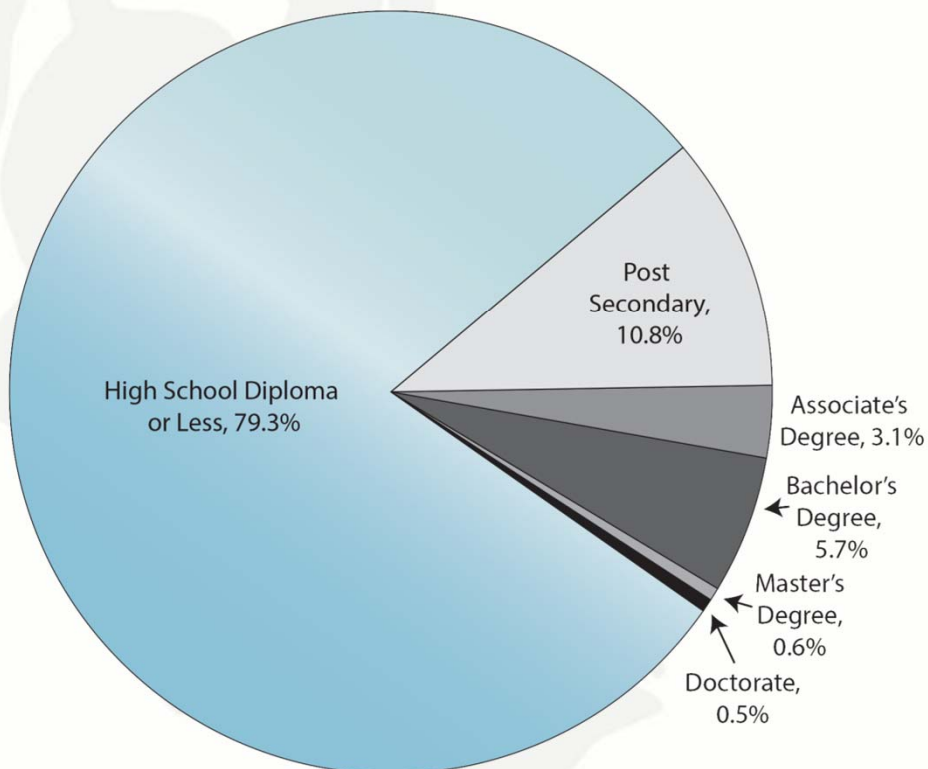
- **Critical Thinking**  
Involves using logic and reasoning to identify the strengths and weaknesses of alternative solutions or approaches to problems.
- **Operation and Control**  
Involves generating or adapting equipment and technology to serve user needs.
- **Technology Design**  
Involves controlling operations of equipment or systems.

Source: O\*NET Online (<http://www.onetcenter.org/>).

# New Hires Survey: Education

<http://doe.state.wy.us/LMI/newhires.htm>

**Educational Requirements for New Hires  
in Wyoming, 2011Q4-2013Q3  
(2-Year Estimates)  
N = 218,308**



## Allows us to examine:

- Wages
- Hours Worked
- Job skills
- Benefits
- Educational and licensing requirements
- Turnover and retention
- Demographics

# STEM Skills in Non-STEM Occupations

Number of Wyoming New Hires Ages 16-24 in Selected Occupations and Percent of Three Selected Skills Rated Important by Employer for the Job Held By New Hires, 2011Q4-2013Q3 (2-Year Estimates)

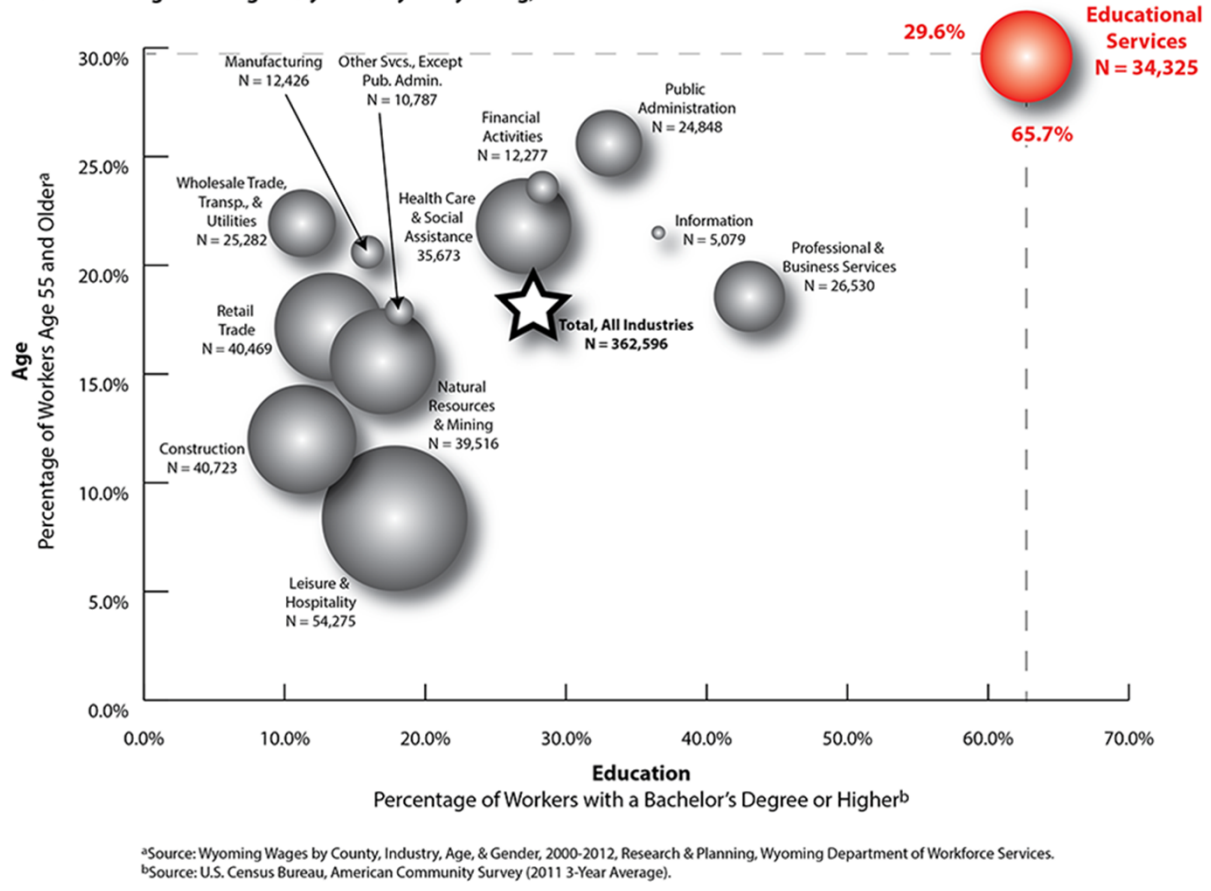
SOC Code	Occupation Title	Estimated Number of New Hires	% of Selected Job Skills Rated Important			
			Critical Thinking	Operation and Control	Technology Design	Average Composite Score of Three Skills
15-1151	Computer User Support Specialists <b>STEM</b>	78	100.0	100.0	100.0	100.0
29-2057	Ophthalmic Medical Technicians	71	100.0	100.0	100.0	100.0
49-9081	Wind Turbine Service Technicians	49	100.0	100.0	100.0	100.0
29-2021	Dental Hygienists	47	100.0	100.0	100.0	100.0
31-9097	Phlebotomists	47	100.0	100.0	100.0	100.0
11-3031	Financial Managers	44	100.0	100.0	100.0	100.0
43-9071	Office Machine Operators, Except Computer	44	100.0	100.0	100.0	100.0
49-2011	Computer, Automated Teller, and Office Machine Repairers	44	100.0	100.0	100.0	100.0
51-3021	Butchers and Meat Cutters	44	100.0	100.0	100.0	100.0
11-3021	Computer and Information Systems Managers <b>STEM</b>	37	100.0	100.0	100.0	100.0
49-3021	Automotive Body and Related Repairers	35	100.0	100.0	100.0	100.0
27-1024	Graphic Designers	30	100.0	100.0	100.0	100.0
17-2051	Civil Engineers <b>STEM</b>	28	100.0	100.0	100.0	100.0
25-2031	Secondary School Teachers, Except Special and Vocational Education	25	100.0	100.0	100.0	100.0
31-2011	Occupational Therapist Assistants	24	100.0	100.0	100.0	100.0
31-9099	Healthcare Support Workers, All Other	24	100.0	100.0	100.0	100.0
49-9062	Medical Equipment Repairers	24	100.0	100.0	100.0	100.0
53-1021	First-Line Supervisors/Managers of Helpers, Laborers, & Material Movers, Hand	23	100.0	100.0	100.0	100.0
53-4011	Locomotive Engineers	23	100.0	100.0	100.0	100.0
13-1071	Employment, Recruitment, and Placement Specialists	22	100.0	100.0	100.0	100.0
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	22	100.0	100.0	100.0	100.0
51-2022	Electrical and Electronic Equipment Assemblers	20	100.0	100.0	100.0	100.0
<b>Total, All New Hires Ages 16-24</b>		<b>63,435</b>	<b>69.6</b>	<b>54.5</b>	<b>29.5</b>	<b>51.2</b>

Source: Research & Planning New Hires Job Skills Survey (<http://doe.state.wy.us/LMI/newhires.htm>).



# STEM Skills in Non-STEM Occupations

**Figure: Percentage of Workers Age 55 and Older and Percentage of Workers with a Bachelor's Degree or Higher by Industry in Wyoming, 2011**



# Industry Projections

<http://doe.state.wy.us/LMI/projections.htm>



Help determine if an industry is projected to contract or expand over the next decade

Wyoming is projected to add 4,087 new jobs from 2011 to 2021. Of those, nearly one-fourth (22.7%) are projected to be in the health care & social assistance industry.



## Training for What Occupation: Re-employment of UI Claimants

- Occupations requiring more than a high school diploma
- Relatively high paying jobs (\$20 or more per hour)
- Employers relying on nonresident workers (at least 20% of all new hires)

### **Questions we can address:**

- Are employers looking outside of Wyoming when they hire for these jobs?
- Are employers satisfied with their new hires' skills?
- Are employers retaining these workers after hiring them?

# Training for What?

**Selected New Hire Occupations<sup>a</sup> for Nonresidents in Wyoming, 2011Q4-2013Q3 (2-Year Estimates)**

SOC Code	Occupation	Typical Education <sup>c</sup>	N	Average Hourly Wage (\$)	Nonresidents <sup>b</sup>		Selected Job Skills Marked "Important" by Employers					Employer Satisfaction with New Hires' Skills				Turnover % Still Working 1 Quarter After Hire
					%	N	Service Orientation	Critical Thinking	Reading Comp.	Tech. Design	Operation and Control	Satisfied	Not Satisfied	Neither	Other	
47-2073	Operating Engineers and Other Construction Equipment ...	Post Secondary	3,316	20.00	20.0	646	42.6	90.2	53.5	45.2	94.4	61.9	1.5	16.5	20.1	81.2
11-9021	Construction Managers	Bachelors	346	43.26	42.4	147	87.3	88.5	88.5	65.6	100.0	100.0	0.0	0.0	0.0	88.5
39-1021	First-Line Super./Manag., Personal Service Workers	Bachelors	278	20.19	29.2	81	100.0	100.0	100.0	3.0	5.9	83.4	0.0	16.6	0.0	100.0
29-9011	Occupational Health and Safety Specialists	Bachelors	276	30.77	24.5	68	85.6	100.0	98.8	49.0	71.5	89.7	0.0	3.4	6.9	96.5
29-1123	Physical Therapists	Masters	181	37.91	26.0	47	100.0	100.0	100.0	87.0	100.0	100.0	0.0	0.0	0.0	74.0
17-2151	Mining and Geological Engineers, Including Mining	Bachelors	177	41.15	26.2	46	41.8	79.1	58.2	79.1	68.7	63.3	15.8	0.0	20.9	100.0
11-9141	Property, Real Estate & Community Association Manager	Post Secondary	167	43.75	22.2	37	65.0	100.0	100.0	16.3	65.0	100.0	0.0	0.0	0.0	95.7
11-1011	Chief Executives	Bachelors	131	42.21	26.1	34	69.1	100.0	100.0	53.6	64.6	90.5	0.0	0.0	9.5	80.9
49-3011	Aircraft Mechanics and Service Technicians	Post Secondary	127	25.00	36.4	46	36.4	100.0	72.7	100.0	100.0	18.2	0.0	54.5	27.3	54.5
17-2051	Civil Engineers	Bachelors	122	23.00	23.1	28	61.5	100.0	100.0	100.0	92.3	76.9	0.0	0.0	23.1	100.0
17-2171	Petroleum Engineers	Bachelors	115	39.00	32.5	37	67.5	100.0	100.0	83.9	67.7	83.9	0.0	0.0	16.1	100.0
11-9199	Managers, All Other	Bachelors	105	43.75	28.8	30	69.3	92.4	87.0	40.6	41.6	92.4	0.0	0.0	7.6	100.0
<b>Total, All Occupations</b>		<b>N/A</b>	<b>218,308</b>	<b>11.00</b>	<b>15.0</b>	<b>32,746</b>	<b>75.4</b>	<b>73.9</b>	<b>64.1</b>	<b>34.6</b>	<b>58.1</b>	<b>60.1</b>	<b>8.9</b>	<b>15.5</b>	<b>15.5</b>	<b>77.4</b>

Source: Research & Planning New Hires Survey, 2011Q4-2013Q3.

<sup>a</sup>Selected new hires occupations are those occupations that: (1) require more than a high school diploma; (2) have an average hourly wage of at least \$20; and (3) nonresidents accounted for at least 20% of all new hires for that occupation.

<sup>b</sup>Nonresidents are individuals for whom Research & Planning could not identify residence using administrative databases.

<sup>c</sup>Typical education source: O\*Net Online (<http://www.onetonline.org/>).

# Training for What?

**Selected New Hire Occupations<sup>a</sup> for Nonresidents in Wyoming, 2011Q4-2013Q3 (2-Year Estimates)**

SOC Code	Occupation	Typical Education <sup>c</sup>	N	Average Hourly Wage (\$)	Nonresidents <sup>b</sup>		Selected Job Skills Marked "Important" by Employers					Employer Satisfaction with New Hires' Skills				Turnover
					%	N	Service Orientation	Critical Thinking	Reading Comp.	Tech. Design	Operation and Control	Satisfied	Not Satisfied	Neither	Other	% Still Working 1 Quarter After Hire
47-2073	Operating Engineers and Other Construction Equipment ...	Post Secondary	3,316	20.00	20.0	646	42.6	90.2	53.5	45.2	94.4	61.9	1.5	16.5	20.1	81.2
11-9021	Construction Managers	Bachelors	346	43.26	42.4	147	87.3	88.5	88.5	65.6	100.0	100.0	0.0	0.0	0.0	88.5
39-1021	First-Line Super./Manag., Personal Service Workers	Bachelors	278	20.19	29.2	81	100.0	100.0	100.0	3.0	5.9	83.4	0.0	16.6	0.0	100.0
29-9011	Occupational Health and Safety Specialists	Bachelors	276	30.77	24.5	68	85.6	100.0	98.8	49.0	71.5	89.7	0.0	3.4	6.9	96.5
29-1123	Physical Therapists	Masters	181	37.91	26.0	47	100.0	100.0	100.0	87.0	100.0	100.0	0.0	0.0	0.0	74.0
17-2151	Mining and Geological Engineers, Including Mining	Bachelors	177	41.15	26.2	46	41.8	79.1	58.2	79.1	68.7	63.3	15.8	0.0	20.9	100.0
11-9141	Property, Real Estate & Community Association Manager	Post Secondary	167	43.75	22.2	37	65.0	100.0	100.0	16.3	65.0	100.0	0.0	0.0	0.0	95.7
11-1011	Chief Executives	Bachelors	131	42.21	26.1	34	69.1	100.0	100.0	53.6	64.6	90.5	0.0	0.0	9.5	80.9
49-3011	Aircraft Mechanics and Service Technicians	Post Secondary	127	25.00	36.4	46	36.4	100.0	72.7	100.0	100.0	18.2	0.0	54.5	27.3	54.5
17-2051	Civil Engineers	Bachelors	122	23.00	23.1	28	61.5	100.0	100.0	100.0	92.3	76.9	0.0	0.0	23.1	100.0
17-2171	Petroleum Engineers	Bachelors	115	39.00	32.5	37	67.5	100.0	100.0	83.9	67.7	83.9	0.0	0.0	16.1	100.0
11-9199	Managers, All Other	Bachelors	105	43.75	28.8	30	69.3	92.4	87.0	40.6	41.6	92.4	0.0	0.0	7.6	100.0
<b>Total, All Occupations</b>		<b>N/A</b>	<b>218,308</b>	<b>11.00</b>	<b>15.0</b>	<b>32,746</b>	<b>75.4</b>	<b>73.9</b>	<b>64.1</b>	<b>34.6</b>	<b>58.1</b>	<b>60.1</b>	<b>8.9</b>	<b>15.5</b>	<b>15.5</b>	<b>77.4</b>

Source: Research & Planning New Hires Survey, 2011Q4-2013Q3.

<sup>a</sup>Selected new hires occupations are those occupations that: (1) require more than a high school diploma; (2) have an average hourly wage of at least \$20; and (3) nonresidents accounted for at least 20% of all new hires for that occupation.

<sup>b</sup>Nonresidents are individuals for whom Research & Planning could not identify residence using administrative databases.

<sup>c</sup>Typical education source: O\*Net Online (<http://www.onetonline.org/>).

# Training for What?

**Selected New Hire Occupations<sup>a</sup> for Nonresidents in Wyoming, 2011Q4-2013Q3 (2-Year Estimates)**

SOC Code	Occupation	Typical Education <sup>c</sup>	N	Average Hourly Wage (\$)	Nonresidents <sup>b</sup>		Selected Job Skills Marked "Important" by Employers					Employer Satisfaction with New Hires' Skills				Turnover % Still Working 1 Quarter After Hire
					%	N	Service Orientation	Critical Thinking	Reading Comp.	Tech. Design	Operation and Control	Satisfied	Not Satisfied	Neither	Other	
47-2073	Operating Engineers and Other Construction Equipment ...	Post Secondary	3,316	20.00	20.0	646	42.6	90.2	53.5	45.2	94.4	61.9	1.5	16.5	20.1	81.2
11-9021	Construction Managers	Bachelors	346	43.26	42.4	147	87.3	88.5	88.5	65.6	100.0	100.0	0.0	0.0	0.0	88.5
39-1021	First-Line Super./Manag., Personal Service Workers	Bachelors	278	20.19	29.2	81	100.0	100.0	100.0	3.0	5.9	83.4	0.0	16.6	0.0	100.0
29-9011	Occupational Health and Safety Specialists	Bachelors	276	30.77	24.5	68	85.6	100.0	98.8	49.0	71.5	89.7	0.0	3.4	6.9	96.5
29-1123	Physical Therapists	Masters	181	37.91	26.0	47	100.0	100.0	100.0	87.0	100.0	100.0	0.0	0.0	0.0	74.0
17-2151	Mining and Geological Engineers, Including Mining	Bachelors	177	41.15	26.2	46	41.8	79.1	58.2	79.1	68.7	63.3	15.8	0.0	20.9	100.0
11-9141	Property, Real Estate & Community Association Manager	Post Secondary	167	43.75	22.2	37	65.0	100.0	100.0	16.3	65.0	100.0	0.0	0.0	0.0	95.7
11-1011	Chief Executives	Bachelors	131	42.21	26.1	34	69.1	100.0	100.0	53.6	64.6	90.5	0.0	0.0	9.5	80.9
49-3011	Aircraft Mechanics and Service Technicians	Post Secondary	127	25.00	36.4	46	36.4	100.0	72.7	100.0	100.0	18.2	0.0	54.5	27.3	54.5
17-2051	Civil Engineers	Bachelors	122	23.00	23.1	28	61.5	100.0	100.0	100.0	92.3	76.9	0.0	0.0	23.1	100.0
17-2171	Petroleum Engineers	Bachelors	115	39.00	32.5	37	67.5	100.0	100.0	83.9	67.7	83.9	0.0	0.0	16.1	100.0
11-9199	Managers, All Other	Bachelors	105	43.75	28.8	30	69.3	92.4	87.0	40.6	41.6	92.4	0.0	0.0	7.6	100.0
<b>Total, All Occupations</b>		<b>N/A</b>	<b>218,308</b>	<b>11.00</b>	<b>15.0</b>	<b>32,746</b>	<b>75.4</b>	<b>73.9</b>	<b>64.1</b>	<b>34.6</b>	<b>58.1</b>	<b>60.1</b>	<b>8.9</b>	<b>15.5</b>	<b>15.5</b>	<b>77.4</b>

Source: Research & Planning New Hires Survey, 2011Q4-2013Q3.

<sup>a</sup>Selected new hires occupations are those occupations that: (1) require more than a high school diploma; (2) have an average hourly wage of at least \$20; and (3) nonresidents accounted for at least 20% of all new hires for that occupation.

<sup>b</sup>Nonresidents are individuals for whom Research & Planning could not identify residence using administrative databases.

<sup>c</sup>Typical education source: O\*Net Online (<http://www.onetonline.org/>).

# Employment Growth

Selected Occupations with Significant Employment Growth in Wyoming Ranked by Employment Change (%), 2009 to 2013

SOC Code	Occupation	Employment				Wages			
		2009	2013	N	%	2009	2013	\$	%
29-1061	Anesthesiologists	10	70	60	600.0%	\$198,381	\$257,523	\$59,142	29.8%
53-6021	Parking Lot Attendants	10	60	50	500.0%	\$17,169	\$24,231	\$7,062	41.1%
51-2022	Electrical and Electronic Equipment Assemblers	40	170	130	325.0%	\$26,423	\$27,275	\$852	3.2%
19-4092	Forensic Science Technicians	10	40	30	300.0%	\$41,408	\$61,260	\$19,852	47.9%
21-1015	Rehabilitation Counselors	110	370	260	236.4%	\$36,606	\$30,281	-\$6,325	-17.3%
17-3022	Civil Engineering Technicians	130	360	230	176.9%	\$49,688	\$43,461	-\$6,227	-12.5%
25-3021	Self-Enrichment Education Teachers	130	350	220	169.2%	\$37,818	\$42,672	\$4,854	12.8%
37-3012	Pesticide Handlers, Sprayers, and Applicators, Vegetation	90	230	140	155.6%	\$27,568	\$31,269	\$3,701	13.4%
53-3011	Ambulance Drivers and Attendants, Except Emergency Medical Technicians	20	50	30	150.0%	\$16,855	\$22,476	\$5,621	33.3%
43-9061	Office Clerks, General	2,220	5,500	3,280	147.7%	\$26,541	\$30,399	\$3,858	14.5%
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	120	280	160	133.3%	\$35,919	\$38,213	\$2,294	6.4%
21-1029	Social Workers, All Other	90	210	120	133.3%	\$51,975	\$52,469	\$494	1.0%
27-4012	Broadcast Technicians	90	210	120	133.3%	\$25,873	\$34,982	\$9,109	35.2%
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	100	230	130	130.0%	\$39,792	\$68,303	\$28,511	71.7%
47-5013	Service Unit Operators, Oil, Gas, and Mining	1,050	2,400	1,350	128.6%	\$42,510	\$50,002	\$7,492	17.6%
17-3025	Environmental Engineering Technicians	60	110	50	83.3%	\$40,936	\$58,158	\$17,222	42.1%
15-1141	Database Administrators	90	160	70	77.8%	\$59,086	\$62,698	\$3,612	6.1%
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	570	930	360	63.2%	\$54,403	\$63,674	\$9,271	17.0%
15-2041	Statisticians	20	30	10	50.0%	\$63,420	\$75,722	\$12,302	19.4%
<b>Subtotal, All 106 Occupations That Experienced Significant Growth</b>		<b>33,560</b>	<b>51,320</b>	<b>17,760</b>	<b>52.9%</b>				
<b>Total, All 199 Occupations that Experienced Significant Change</b>		<b>121,090</b>	<b>119,490</b>	<b>-1,600</b>	<b>-1.3%</b>				

Source: Occupational Employment Statistics (OES) survey data (<http://doe.state.wy.us/LMI/oes.htm>).

A total of 199 occupations in Wyoming experienced significant change between 2009 and 2013. Of those, 106 experienced significant growth. A complete table with all 199 occupations is available upon request.

*Wyoming*

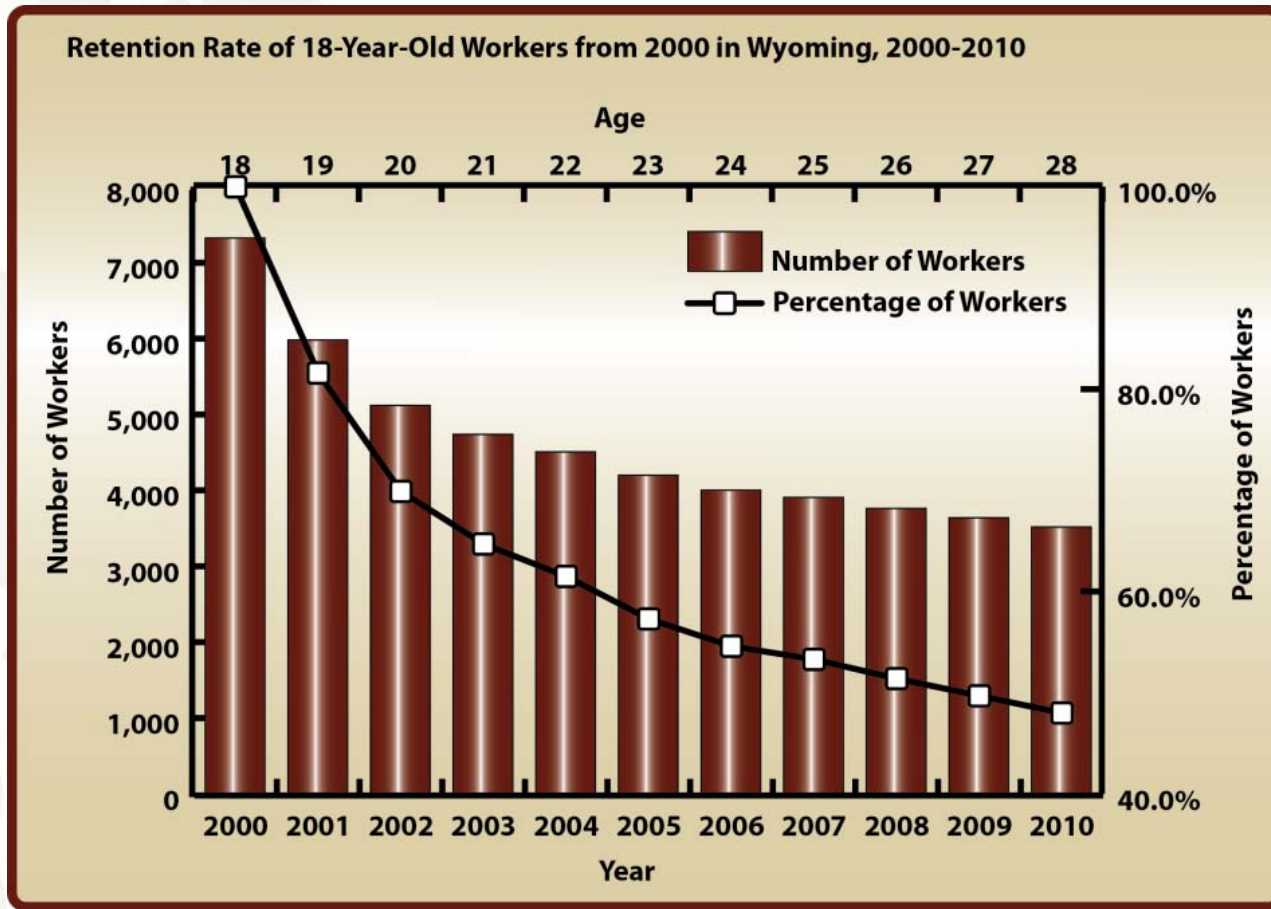
## Monitoring Need to Focus Training Efforts: Resources at Your Fingertips

- ✓ Industry Projections
- ✓ New Hires Survey Data
- ✓ Wage Data
- ✓ Custom Research



# Custom Research: *A Decade Later*

[http://doe.state.wy.us/LMI/w\\_r\\_research/A\\_Decade\\_Later.pdf](http://doe.state.wy.us/LMI/w_r_research/A_Decade_Later.pdf)



In 2000, there were 7,325 individuals age 18 (2000 cohort) employed at any time in Wyoming. In 2010, only 48.0% still had wages in Wyoming.

# Custom Research: *A Decade Later*

[http://doe.state.wy.us/LMI/w\\_r\\_research/A\\_Decade\\_Later.pdf](http://doe.state.wy.us/LMI/w_r_research/A_Decade_Later.pdf)

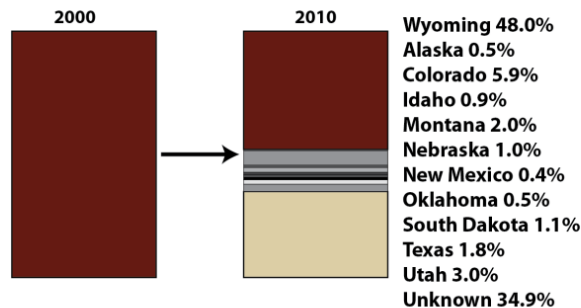
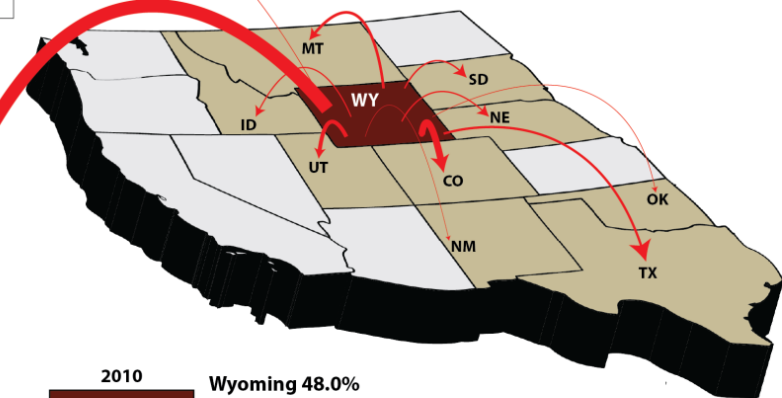
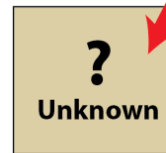
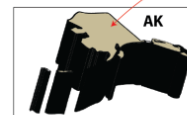
## Where did they go?

- 48.0% retained in Wyoming
- 17.1% in states with which R&P has a data sharing agreement
- 34.9% "unknown":
  - a. Working in a state with which R&P does not have a data sharing agreement
  - b. Left the labor force for other reasons, such as caring for family members, returning to school, disability, etc.
  - c. Deceased



**Figure 1: Where Did They Go? 2000 Cohort in 2010**

Tracking the exit of 18-year-olds working in Wyoming in 2000 and where they were working in 2010.





# Wyoming Labor Force TRENDS

<http://doe.state.wy.us/LMI/trends.htm>



## Monthly Features:

- Local Area Unemployment Statistics (LAUS)
- Employment statistics
- Economic indicators
- Unemployment Insurance (UI) claims

## Quarterly Features:

- Quarterly Census of Employment & Wages (QCEW)
- Wage Records data
- Quarterly turnover statistics
- Workers' Compensation Claims

Sign up for *Wyoming Labor Force Trends*  
<http://doe.state.wy.us/LMI/puborder.htm>



*Wyoming*

**Research & Planning**

Wyoming Department  
of Workforce Services  
P.O. Box 2760  
246 S. Center St.  
Casper, WY 82601  
(307) 473-3807

**DWS-RESEARCHPLANNING@wyo.gov**  
**<http://wyomingLMI.org>**

**Michele Holmes**  
**Public Relations Specialist**  
**[Michele.Holmes@wyo.gov](mailto:Michele.Holmes@wyo.gov)**



**Research & Planning**  
**Wyoming DWS**