

# WORKFORCE OPPORTUNITIES IN WYOMING: DEVELOPING A DATA- DRIVEN APPROACH TO PUBLIC SECTOR INVESTMENT AND EVALUATION

Presented to The Wyoming Workforce Development Council

September 11, 2014

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Research & Planning  
Wyoming Department of Workforce Services

<http://wyomingLMI.gov>



Research & Planning  
Wyoming DWS



## Agenda

- List of High Demand Occupations
- National and Regional Demand – Scope of the Market
- Local Demand
- Directing Training Dollars to Optimize Investment



# High Demand Occupations



# Mission: Compile a List of High-Demand, High-Growth Occupations for WWDC

Wyoming Occupational Projections and Average Hourly Wage for Occupations with and Average Hourly Wage >= \$14.00 and Projected Employment Growth >= 200 Jobs Over the Next Decade								
WWDC Criteria	SOC Code	SOC Title	Employment 2012	Employment 2022	Net Change	Percent Change	Hourly Wage	
Yes	47-2031	Carpenters	3,908	4,706	798	20.4	\$19.66	
Yes	49-9041	Industrial Machinery Mechanics	2,407	3,115	708	29.4	\$27.21	
No	29-1141	Registered Nurses	4,738	5,619	881	18.6	\$29.56	
No	53-3032	Heavy and Tractor-Trailer Truck Drivers	7,081	7,901	820	11.6	\$22.28	
No	11-1021	General and Operations Managers	5,352	6,153	801	15	\$45.94	
No	43-3031	Bookkeeping, Accounting, and Auditing Clerks	4,718	5,396	678	14.4	\$17.52	
No	47-2061	Construction Laborers	3,907	4,567	660	16.9	\$15.61	
No	43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	4,787	5,412	625	13.1	\$16.08	
No	47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	3,743	4,323	580	15.5	\$31.68	
No	49-9071	Maintenance and Repair Workers, General	3,966	4,442	476	12	\$20.03	
No	43-9061	Office Clerks, General	5,630	6,087	457	8.1	\$14.61	
No	47-2111	Electricians	2,751	3,171	420	15.3	\$25.82	
No	25-2021	Elementary School Teachers, Except Special Education	2,649	3,031	382	14.4	\$27.63	
No	41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	2,115	2,494	379	17.9	\$28.18	
No	47-2073	Operating Engineers and Other Construction Equipment Operators	5,543	5,917	374	6.7	\$23.66	
No	43-6013	Medical Secretaries	1,169	1,534	365	31.2	\$15.06	
No	53-7062	Laborers and Freight, Stock, and Material Movers, Hand	2,269	2,625	356	15.7	\$15.15	
No	47-5013	Service Unit Operators, Oil, Gas, and Mining	3,130	3,472	342	10.9	\$24.04	
No	43-4051	Customer Service Representatives	1,919	2,260	341	17.8	\$14.14	
No	51-4121	Welders, Cutters, Solderers, and Brazers	2,437	2,732	295	12.1	\$23.59	
No	13-2011	Accountants and Auditors	1,887	2,161	274	14.5	\$29.77	
No	43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,928	2,170	242	12.6	\$22.37	
No	41-1011	First-Line Supervisors of Retail Sales Workers	3,735	3,973	238	6.4	\$19.02	
No	53-3033	Light Truck or Delivery Services Drivers	1,475	1,692	217	14.7	\$17.35	
No	47-2141	Painters, Construction and Maintenance	1,092	1,304	212	19.4	\$17.62	
No	47-2152	Plumbers, Pipefitters, and Steamfitters	1,085	1,294	209	19.3	\$20.35	
No	47-5071	Roustabouts, Oil and Gas	2,044	2,253	209	10.2	\$19.42	

Source: Wyoming's Occupational Projections 2012 to 2022 and Wyoming's Occupational Employment Statistics (OES) 2013. Wyoming Department of Workforce Services, Research & Planning.  
 Prepared by T Glover, WYDWS Research and Planning. 08/01/2014



## Tools to Identify High-Demand, High-Growth Occupations

### New Hires Survey

- ✓ Number of New Hires by Occupation
- ✓ Wages & Employment / OES Basis
- ✓ Percentage of Nonresident Workers

# National Demand



## High Demand: Enough Supply?

- **Labor Shortage\***
  - Distinct from high-demand
  - In absolute terms, too few people to fill employment needs at the prevailing wage
  - Indicated by a significant rise in real wages across all sectors and occupations

\*Excerpt from working paper "Occupational Shortages in the Construction Industry" forthcoming by Katelynd Faler, 2014, DWD, R&P



## High Demand: Enough Supply?

- **Skills Shortage\***
  - Economic Definition
    - Too few workers with *appropriate skills* to fill positions at the *prevailing wage*
  - Employer/Social Definition
    - Too few workers with *appropriate skills* to fill positions at the wages employers want to pay

\*Excerpt from working paper “Occupational Shortages in the Construction Industry” forthcoming by Katelynd Faler, 2014, DWD, R&P



# National and Regional Skills Shortages of Critical Construction Occupations\*

Likely Regional Skill Shortage	Possible Regional Skill Shortage	Unlikely Regional Skill Shortage
Crane and Tower Operators (5)	Electricians (4)	Brickmasons and Blockmasons (1)
Electrical Power-Line Installers (7) Heating, AC, and Refrigeration Mechanics (5)	Elevator Installer and Repairers (too much suppressed data)	Carpenters (1)
Insulation Workers, Mechanical (5)	Paving, Surfacing, and Tamping Equipment Operators (4)	Drywall and Ceiling Tile Installers (1)
Operating Engineers and Other Construction Equipment Operators (5)	Reinforcing Iron and Rebar Workers (too much suppressed data)	Excavating and Loading Machine and Dragline Operators (3)
Security and Fire Alarm Systems Installers (5)	Telecommunications Equipment Installers and Repairers, Except Line Installers (4)	Plumbers (1)
	Telecommunications Line Installers and Repairers (4)	Sheet Metal Workers (3)
		Tapers (3)
		Tile and Marble Setters (1)
		Welders (3)

## Receiving Media Attention for Shortage

### Facing National Skills Shortage, OES-based

(Number of States with Real Median Hourly Wage Increases) OES-based

\*Excerpt from working paper: Occupational Shortages in the Construction Industry forthcoming by Katelvdn Faler. 2014. DWS, R&P.

# Regional Demand

# Regional Demand in Selected States from 2012 to 2022: If We Train Them, Will They Come?

Code	Occupation	Wyoming			Montana			Colorado			North Dakota			US		
		N Ch	% Ch	Hr Wage	N Ch	% Ch	Hr Wage	N Ch	% Ch	Hr Wage	N Ch	% Ch	Hr Wage	N Ch	% Ch	Hr Wage
291141	Registered Nurses	881	18.6	\$29.56	1,786	20.4	\$29.18	11,070	26.2	\$33.16	1,635	21.1	\$26.94	526,900	19.4	\$33.13
472031	Carpenters	798	20.4	\$19.66	967	26.3	\$18.79	5,020	28.8	\$19.59	829	19.9	\$18.28	218,200	24.2	\$21.62
472061	Construction Laborers	660	16.9	\$15.61	994	24.9	\$16.17	6,380	32.1	\$15.12	919	17.4	\$17.79	259,900	24.3	\$16.84
414012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	379	17.9	\$28.18	945	21.9	\$27.23	5,470	16.1	\$34.51	708	14.5	\$28.32	132,100	8.9	\$31.09
472073	Operating Engineers and Other Construction Equipment Operators	374	6.8	\$23.66	709	21.5	\$22.04	1,650	23.7	\$21.08	228	7.4	\$23.41	66,400	18.9	\$22.63
475071	Roustabouts, Oil and Gas	209	10.2	\$19.42	259	36.8	\$22.39	1,940	70.2	\$19.04	-327	-7.7	\$21.29	11,700	19.2	\$17.39
499041	Industrial Machinery Mechanics	708	29.4	\$27.21	195	26.7	\$23.93	1,760	36	\$24.27	420	2.6	\$26.27	60,300	18.9	\$23.83
436013	Medical Secretaries	365	31.2	\$15.06	694	32.2	\$14.80	2,850	37	\$16.36	170	30.4	\$14.58	189,300	36	\$15.93

L.A. Hammer, R&P DWS, 8/20/14, WY LMI Projections, MT LMI Projections, ND LMI Projections, ProjectionCentral, BLS OES Data

# Local Demand





# Training for What?

## Nonresidents in Wyoming's Labor Market

**Nonresidents:** “Individuals without a Wyoming-issued driver's license or at least four quarters of work history in Wyoming.”

-Jones, 2002; <http://doe.state.wy.us/LMI/1102/a2.htm>

**New Hire:** “Someone who, during a particular quarter, started working for an employer he or she had not worked for since at least 1992, the first year for which R&P has wage records.”

- Knapp, 2011; <http://doe.state.wy.us/LMI/0211/a2.htm>

# Training for What?

## Nonresidents in Wyoming's Labor Market

### 2011Q4-2013Q3:

218,308 New Hires in Wyoming  
 32,843 (15.0%) Were Nonresidents

Often hired to fill low-skill, low-wage jobs

### Nonresident New Hires, 2011Q4-2013Q3:

- Combined Food Prep. & Serving Workers, Including Fast Food (\$8.00)
  - Maids & Housekeeping Cleaners (\$8.50)
    - Construction Laborers (\$13.00)
    - Waiters & Waitresses (\$3.50)
      - Cashiers (\$8.50)
  - Restaurant Cooks (\$10.00)

**TABLE 1:** Characteristics for Top 20 Wyoming New Hires Occupations for Nonresidents Ranked by Number of Nonresident New Hires, 2011Q4-2013Q3

Job Characteristics	00-0000 Total, All Occupations	Occupation and SOC Code		
		35-3021 Combined Food Prep. & Serving Workers ...	37-2012 Maids & Housekeeping Cleaners	47-2061 Construction Laborers
Typical Education*	N/A	High School Diploma or Less	High School Diploma or Less	High School Diploma or Less
N	218,308	10,784	6,429	7,948
Nonresidents	32,843	2,090	1,788	1,707
Nonresident %	15.0	19.4	27.8	21.5
Average Hourly Wage (\$)	11.00	8.00	8.50	13.00

# Training for What?

## Training Opportunities in Wyoming

### Occupations Meeting Three Selected R&P Criteria:

1. Occupations requiring more than a high school diploma
2. Relatively high paying jobs (\$15/hour or more)
3. Employers relying on nonresident workers (at least 20% of all new hires)

**Table 2:** Selected New Hires Occupations Requiring More Than a High School Diploma With an Average Hourly Wage of At Least \$15 in Which Nonresidents Accounted for At Least 20% of All New Hires in Wyoming, 2011Q4-2013Q3

Job Characteristics	Occupation and SOC Code			
	00-0000	47-2073	11-9021	17-3031
	Total All Occupations	Operating Engineers & Other Construction ...	Construction Managers	Surveying & Mapping Technicians
Typical Education <sup>a</sup>	N/A	Post-Secondary Certificate	Bachelors	Associates
N	218,308	3,316	346	309
Nonresidents				
Nonresident N	32,843	646	147	90
Nonresident %	15.0	20.0	42.4	29.1
Average Hourly Wage (\$)	11.00	19.81	43.26	16.00



# Training for What?

## Nonresidents in Wyoming's Labor Market

### Examples of Occupations Meeting these Three Criteria

#### Operating Engineers & Other Construction Equipment Specialists (SOC 47-2073)

Total new hires: 3,316

Nonresident new hires: 646  
(20.0% of total)

Education: Postsecondary Certificate  
Average Hourly Wage: \$19.81

#### Construction Managers (SOC 11-9021)

Total new hires: 346

Nonresident new hires: 147  
(42.4% of total)

Education: Bachelor's Degree  
Average Hourly Wage: \$43.26

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Job Characteristics	Occupation and SOC Code			
	00-0000 Total All Occupations	47-2073 Operating Engineers & Other Construction ...	11-9021 Construction Managers	17-3031 Surveying & Mapping Technicians
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# Training for What?

**11-9021  
Construction  
Managers**

42.4% of all new hires were nonresidents

Average hourly wage: \$43.26

100.0% of employers were satisfied with new hires' skills

Retention Rate:  
88.5% of these  
new hires were  
still working for  
that employer  
one quarter later

Job Characteristics		11-9021 Construction Managers
Typical Education <sup>a</sup>		Bachelors
Nonresidents	N	346
	Nonresident N	147
	Nonresident %	42.4
	Average Hourly Wage (\$)	43.26
% Paid Piece Rate		0.0
% Offered Selected Benefits	Health Insurance	73.1
	Retirement	73.1
	Paid Leave	74.4
Skills Selected as "Important" (%)	Service Orientation	87.3
	Critical Thinking	88.5
	Reading Comprehension	88.5
	Technology Design	65.6
	Operation and Control	100.0
Employers' Satisfaction with New Hires' Skills	Satisfied	100.0
	Not Satisfied	0.0
	Neither	0.0
	Other	0.0
Average Weekly Hours	20 or Less	0.0
	21-35	0.0
	36 or More	100.0
Gender	Female	6.8
	Male	50.7
	Nonresident	42.4
Age Group	19 and Younger	0.0
	20-24	0.0
	25-34	6.8
	35-44	22.9
	45-54	25.1
	55-64	9.5
	65 and Older	0.0
Unknown (Nonresidents)	35.6	
Retention	% Still Working 1 Quarter After Hire	88.5

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# Training for What?

Nonresidents in Wyoming's Labor Market

## Example of an Occupation NOT Meeting These Three Criteria

**Sales Representatives, Wholesale and Manufacturing (SOC 41-4012)**

Total new hires: 1,066

Nonresident new hires: 71

(6.7% of total)

Education: Postsecondary Certificate

Average Hourly Wage: \$19.23

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Nonresident %	15.0	20.0	42.4	29.1
Average Hourly Wage (\$)	11.00	19.81	43.26	16.00

## Training for What?

6.7% of all new hires were nonresidents

Average hourly wage: \$19.23

76.1% of employers were satisfied with new hires' skills

92.7% of these new hires were still working for that employer one quarter later

41-4012  
Sales  
Representatives,  
Wholesale and  
Manufacturing

Job Characteristics		41-4012 Sales Representatives, Wholesale and Manufacturing
Typical Education		Post-Secondary Certificate
N		1,066
Nonresidents	Nonresident N	71
	Nonresident %	6.7
	Average Hourly Wage (\$)	19.23
	% Paid Piece Rate	16.4
% Offered	Health Insurance	75.6
Selected	Retirement	66.5
Benefits	Paid Leave	83.8
Skills Selected as "Important" (%)	Service Orientation	95.6
	Critical Thinking	90.9
	Reading Comprehension	95.6
	Technology Design	74.2
	Operation and Control	57.5
Employers' Satisfaction with New Hires' Skills	Satisfied	76.1
	Not Satisfied	3.7
	Neither	16.9
	Other	3.3
Average Weekly Hours	20 or Less	2.1
	21-35	4.1
	36 or More	93.9
Gender	Female	25.3
	Male	67.9
	Nonresident	6.7
Age Group	19 and Younger	6.8
	20-24	3.6
	25-34	32.4
	35-44	23.7
	45-54	15.7
	55-64	9.4
	65 and Older	1.8
	Unknown (Nonresidents)	6.7
Retention	% Still Working 1 Quarter After Hire	92.7

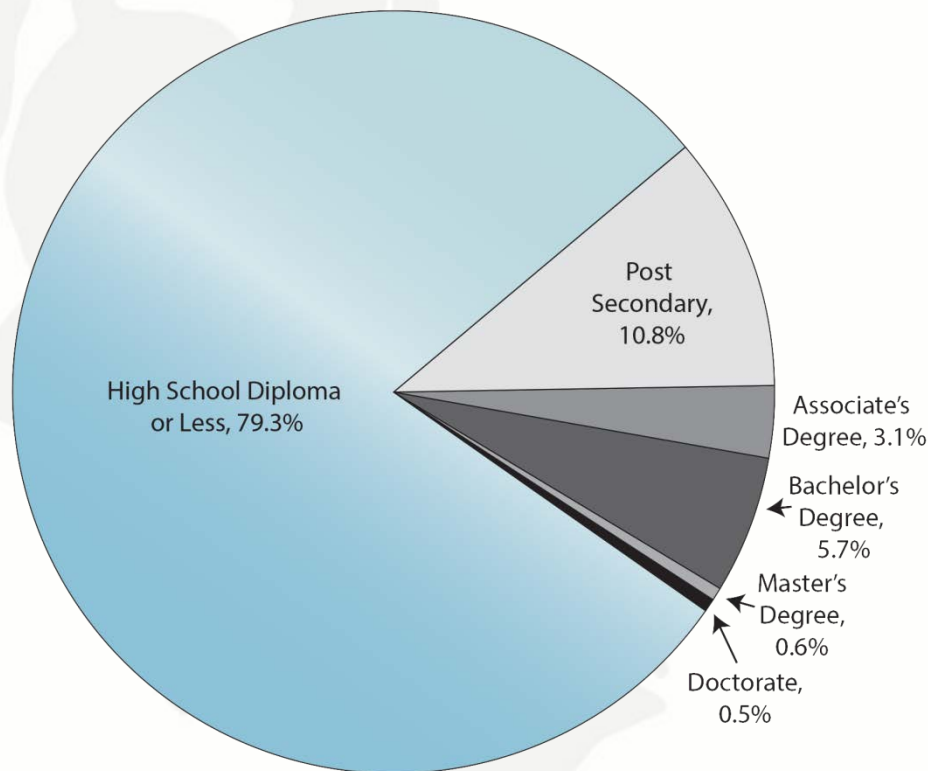
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# New Hires Survey: Employer Practice

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

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

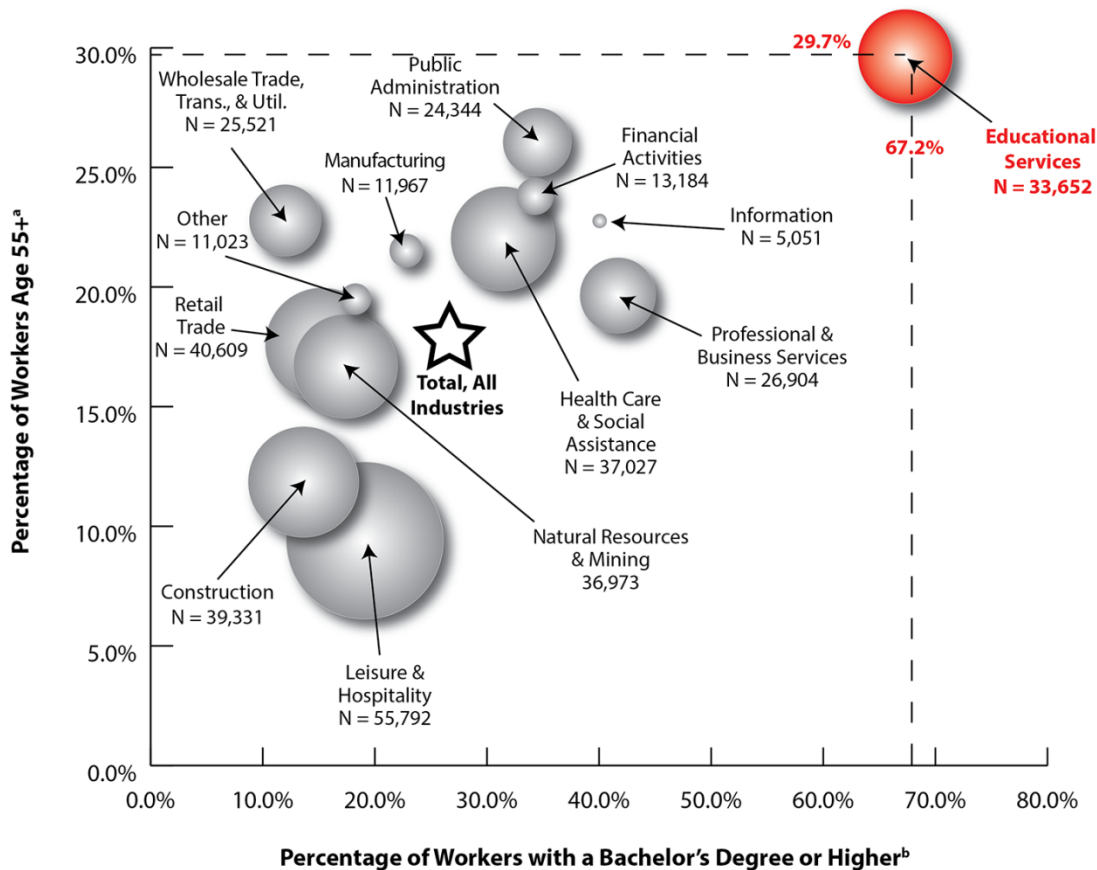


## Allows us to examine:

- Entry level wages
- Hours Worked
- Job skills
- Benefits
- Educational and licensing requirements
- Turnover and retention
- Demographics

# Demographics and Retirement Trends / Replacement Need

**Figure: Percentage of Workers Age 55 and Older (2013) and Percentage of Workers with a Bachelor's Degree or Higher by Industry in Wyoming (2012)**



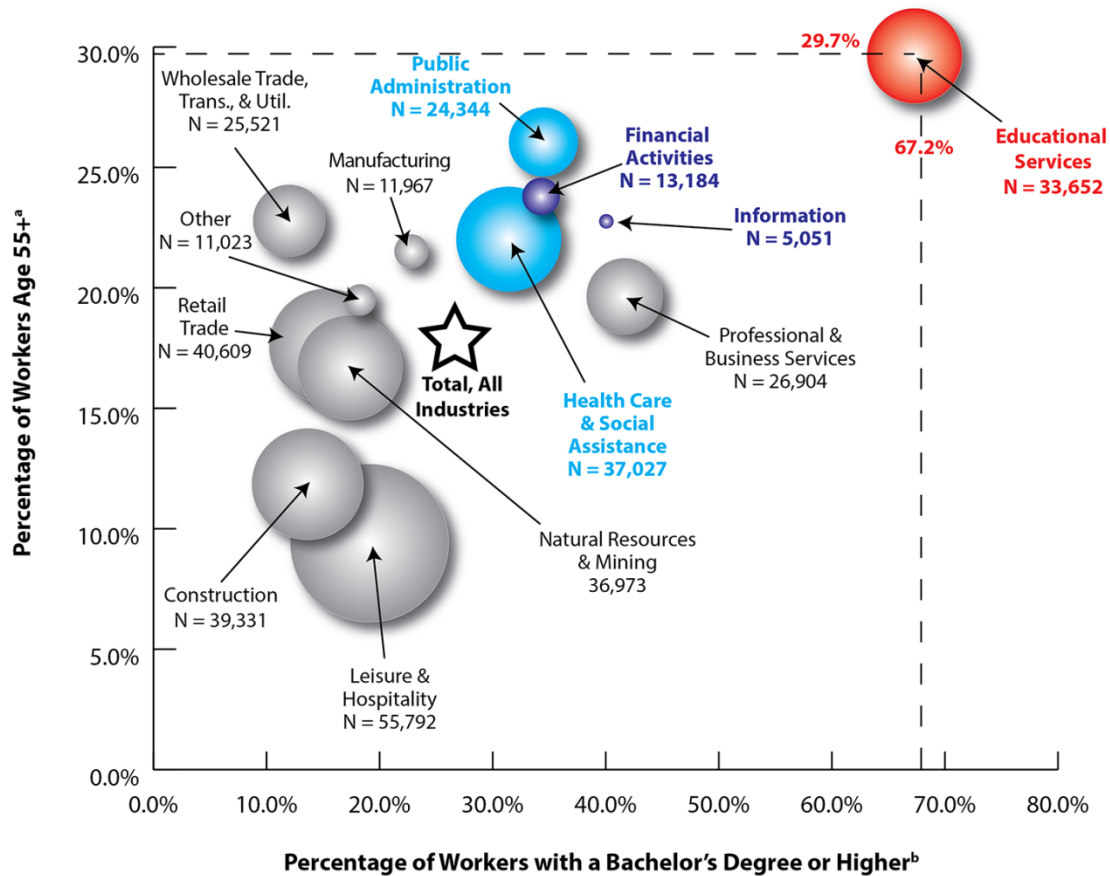
Sources:

<sup>a</sup>Earnings by County, Age & Gender, 2000 to 2013. Research & Planning, WY DWS, 2014.

<sup>b</sup>American Community Survey. U.S. Census Bureau, 2012 (Three-Year Average).

# Demographics and Retirement Trends / Replacement Need

**Figure: Percentage of Workers Age 55 and Older (2013) and Percentage of Workers with a Bachelor's Degree or Higher by Industry in Wyoming (2012)**



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<sup>a</sup>Earnings by County, Age & Gender, 2000 to 2013. Research & Planning, WY DWS, 2014.  
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# Wyoming at Work

ETA WP 9002/VETS200 Quarterly:ETA 9002E Q4 2013, Q4 2014 Change									
Industry Code	Industry	O*NET SOC				11			
		Total (2012)	Total (2013)	Number Change	% Change	Management Occ. (2012)	Management Occ. (2013)	Number Change2	% Change3
1	Total Openings Received	41,000	52,576	11576	28.2%	1,004	1,267	263	26.2%
11	Agriculture, Forestry, Fishing, and Hunting	1,134	1,580	446	39.3%	9	10	1	11.1%
21	Mining	1,672	2,170	498	29.8%	48	69	21	43.8%
22	Utilities	255	349	94	36.9%	18	9	-9	-50.0%
23	Construction	7,635	11,321	3686	48.3%	63	85	22	34.9%
31-33	Manufacturing	2,049	2,314	265	12.9%	42	49	7	16.7%
42	Wholesale Trade	830	1,202	372	44.8%	30	36	6	20.0%
44-45	Retail Trade	4,023	4,812	789	19.6%	85	111	26	30.6%
48-49	Transportation and Warehousing	2,415	3,640	1225	50.7%	32	27	-5	-15.6%
51	Information	546	704	158	28.9%	25	20	-5	-20.0%
52	Finance and Insurance	633	669	36	5.7%	52	40	-12	-23.1%
53	Real Estate and Rental and Leasing	377	415	38	10.1%	24	29	5	20.8%
54	Professional, Scientific and Technical Services	1,222	1,574	352	28.8%	38	54	16	42.1%
55	Management of Companies and Enterprises	35	68	33	94.3%	14	17	3	21.4%
⋮									
	Total Employers	4,298	4,450	152	3.5%				

# Training Dollars & Evaluating Investment





## Program Evaluation

- Hathaway Scholarship Program
- Workforce Development Training Fund
- WyIN (Wyoming Investment in Nursing)



## Monitoring the Investment

- Workforce opportunities list endorsed September 2014
- First trainees enter program 4<sup>th</sup> Quarter 2014
- 4<sup>th</sup> Quarter 2015: did trainee get job?
- 1<sup>st</sup> Quarter 2016: where are they employed?
- Evaluation needs to be built in up front, otherwise necessary data are missing & program evaluation is costly

Wyoming

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