Yesterday, Today and Tomorrow
The Future of Work

2017 Sector Academy --- October 27, 2017
General Economic Update

• The major driver for Oregon’s economic prosperity originally was the harvesting, processing and distribution of our natural and raw resources.

• A key economic driver now is human capital/workforce. It is the continued in-migration, population growth, and an aligned, educated and trained workforce that will lead to economic growth, wealth creation and an improved quality of life.
1. Today
Oregon’s unemployment rate is similar to the nation’s.

Oregon’s Unemployment Rate Lower Than the U.S.
(Bars Represent NBER Recessions)

- 11.9% in November and December 1982
- 4.1% in August 2017

Source: Oregon Employment Department and National Bureau of Economic Research
Oregon Unemployment: Ten Highest / Ten Lowest County Rates

August 2017

Net migration into Oregon is rising. This has implications for labor force growth, labor force supply, and demand for products and services.

Source: Portland State University, Population Research Center
Oregon’s labor force growth picked up again this year.

Oregon Civilian Labor Force, Seasonally Adjusted
2007 to Present

Source: Local Area Unemployment Statistics

Support Business ∙ Promote Employment
We’ve tended to grow faster than the U.S. in the good times, but lose more jobs (relative to our size) in the tough times.
Health services continue to see strong job growth.

Over the year:
- Ambulatory: +3,100
- Hospitals: +900
- Nursing and residential: +1,700
- Social assistance: +600

Support Business · Promote Employment
Durable goods manufacturing has added few jobs since losing jobs last year, while nondurable goods manufacturing is seeing a lot of growth.
Wood products, metals, machinery, electronics, and food are areas of manufacturing seeing a lot of job growth.

Oregon Manufacturing Employment Compared with Last Year
August 2016 to August 2017

- Wood products: +300
- Primary metals: +200
- Fabricated metals: +500
- Machinery: +600
- Computer and electronic products: -1,000
- Transportation equipment: -100
- Food manufacturing: +1,000
- Paper manufacturing: +0

Support Business ∙ Promote Employment
Real wages of private nonfarm payroll jobs have been rising since early 2015.

Average Hourly Wages on the Rise
Oregon, 12-Month Moving Average, Adjusted for Inflation

Source: Oregon Employment Department and Bureau of Labor Statistics
Oregon's Year-Over-Year Percentage Change in Jobs
seasonally adjusted

12-Month Jobs Growth Rate
Oregon's Year-Over-Year Percentage Change in Jobs
seasonally adjusted

Support Business · Promote Employment
2. Tomorrow
What’s New?

- “Heads Up” - New Enhanced Methodology for the next round of 2017-2026 Long-term Industry and Occupational Projections
- Released late in the Spring of 2018
Former Methodology

New Methodology

The Actual Labor Market

Opportunities

New Growth

Transfers

Changes

New Growth

New Growth

New Growth
Comparisons

• Georgetown – “Carnevale”

• **New Methodology**

• Former Methodology
“NEW” Official Bureau of Labor Statistics
National Long-Term Projections

Long-Term Projections (Decade, % Change)

Source: Bureau of Labor Statistics
Chart 1. Fastest growing occupations

Percent change in employment, projected 2016-26

- Solar photovoltaic installers
- Wind turbine service technicians
- Home health aides
- Personal care aides
- Physician assistants
- Nurse practitioners
- Statisticians
- Physical therapist assistants
- Software developers, applications
- Mathematicians
- Bicycle repairers
- Medical assistants
- Physical therapist aides
- Occupational therapy assistants
- Information security analysts
- Genetic counselors
- Operations research analysts
- Forest fire inspectors and prevention specialists
- Health specialties teachers, postsecondary
- Derrick operators, oil and gas

Overall growth, all occupations = 7%


Chart 2. Most new jobs

Employment growth, projected 2016-26

- Personal care aides
- Combined food preparation and serving workers, including fast food
- Registered nurses
- Home health aides
- Software developers, applications
- Janitors and cleaners, except maids and housekeeping cleaners
- General and operations managers
- Laborers and freight, stock, and material movers, hand
- Medical assistants
- Waiters and waitresses
- Nursing assistants
- Construction laborers
- Cooks, restaurant
- Accountants and auditors
- Customer service representatives
- Market research analysts and marketing specialists
- Medical secretaries
- Landscaping and groundskeeping workers
- Heavy and tractor-trailer truck drivers
- Maintenance and repair workers, general

Chart 3. Most occupational openings
Occupational openings, projected 2016-26 annual average

1. Combined food preparation and serving workers, including fast food
2. Retail salespersons
3. Cashiers
4. Waiters and waitresses
5. Personal care aides
6. Laborers and freight, stock, and material movers, hand
7. Customer service representatives
8. Office clerks, general
9. Janitors and cleaners, except maids and housekeeping cleaners
10. Stock clerks and order fillers
11. Administrative assistants, except legal, medical, and executive
12. Heavy and tractor-trailer truck drivers
13. General and operations managers
14. Registered nurses
15. Maids and housekeeping cleaners
16. Cooks, restaurant
17. Nursing assistants
18. Childcare workers
19. Accounting, auditing, and quantity surveyors
20. First-line supervisors of retail sales workers


Chart 4. Most job losses
Numeric decline in employment, projected 2016-26

1. Administrative assistants, except legal, medical, and executive
2. Team assemblers
3. Executive secretaries and executive administrative assistants
4. Inspectors, testers, sorters, samplers, and weighers
5. Electrical and electronic equipment assemblers
6. Data entry keyers
7. Tellers
8. Postal service mail carriers
9. Legal secretaries
10. Correctional officers and jailers
11. Assemblers and fabricators, all other
12. Office clerks, general
13. Cashiers
14. Cooks, fast food
15. Word processors and typists
16. Bookkeeping, accounting, and auditing clerks
17. Computer programmers
18. Sewing machine operators
19. Hog, corn, and grain machine setters, operators, and tenders, metal and plastic
20. Switchboard operators, including answering service

Short and Long-term Industry and Occupational Projections

• National Long-term estimates of industry and occupational employment growth for the next decade (annualized).
• Oregon figures will be released late in the Spring of 2018
3. The Future
Science, Technology, Engineering, and Math (STEM) - American Community Survey

• There are more that twice as \((2X)\) many STEM educated native born Americans then there are STEM jobs in our economy.

• Only around one-third \((1/3)\) of STEM Educated native born Americans are in a STEM occupation.

• Nevertheless – STEM is growing faster than the average.

• STEM occupations are beginning to be diffused across all industries, in many they historically have not been part of.
The **Latest Gear** in the Game

- Industry
- Occupation
- Education/Instruction
- Knowledge, Skills, and Abilities
- **Work Activities**
## Occupation Groupings and Susceptibility to Automation

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Low Risk</th>
<th>Medium Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer, Engineering, and Science</td>
<td>81.6%</td>
<td>12.5%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Education, Legal, Community Service, Arts, and Media</td>
<td>74.4%</td>
<td>20.0%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Management, Business, and Financial</td>
<td>68.8%</td>
<td>7.2%</td>
<td>24.0%</td>
</tr>
<tr>
<td>Healthcare Practitioners and Technical</td>
<td>60.3%</td>
<td>30.8%</td>
<td>8.9%</td>
</tr>
<tr>
<td>Construction and Extraction</td>
<td>19.1%</td>
<td>11.4%</td>
<td>69.5%</td>
</tr>
<tr>
<td>Sales and related</td>
<td>14.5%</td>
<td>5.4%</td>
<td>80.2%</td>
</tr>
<tr>
<td>Installation, Maintenance, and Repair</td>
<td>12.0%</td>
<td>57.1%</td>
<td>30.9%</td>
</tr>
<tr>
<td>Service</td>
<td>11.7%</td>
<td>20.1%</td>
<td>68.3%</td>
</tr>
<tr>
<td>Production</td>
<td>7.5%</td>
<td>14.2%</td>
<td>78.3%</td>
</tr>
<tr>
<td>Office and Administrative Support</td>
<td>6.4%</td>
<td>25.3%</td>
<td>68.4%</td>
</tr>
</tbody>
</table>

## Individual Occupations and Susceptibility to Automation

<table>
<thead>
<tr>
<th>Rank</th>
<th>Occupation</th>
<th>Replacement Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>614</td>
<td>Nuclear Power Reactor Operators</td>
<td>95.0%</td>
</tr>
<tr>
<td>592</td>
<td>Waiters and Waitresses</td>
<td>94.0%</td>
</tr>
<tr>
<td>431</td>
<td>Heavy and Tractor-Trailer Truck Drivers</td>
<td>79.0%</td>
</tr>
<tr>
<td>379</td>
<td>Dental Hygienists</td>
<td>68.0%</td>
</tr>
<tr>
<td>357</td>
<td>Social Science Research Assistants</td>
<td>65.0%</td>
</tr>
<tr>
<td>283</td>
<td>Historians</td>
<td>44.0%</td>
</tr>
<tr>
<td>282</td>
<td>Economists</td>
<td>43.0%</td>
</tr>
<tr>
<td>153</td>
<td>Nuclear Engineers</td>
<td>7.0%</td>
</tr>
<tr>
<td>44</td>
<td>Educational, Guidance, School, and Vocational Counselors</td>
<td>0.9%</td>
</tr>
<tr>
<td>41</td>
<td>Secondary School Teachers, Except Special and Career/Technical</td>
<td>0.8%</td>
</tr>
</tbody>
</table>


The Future of Work - “Economic Drivers”

• Pure Population Growth and Demographics
• Healthcare -- Technology -- Gig Economy -- Telework ...
• Workforce Flexibility and Aptitude for Change
The Future of Work - “Eras”

• Next 10 Years >>> Robots/Automation/Artificial Intelligence, Workforce Shortage and Skill’s Gaps/Poor Alignment and Big Data

• 10 to 20 years >>> Big Data/Robots/Automation/Artificial Intelligence begin to really change the world like we have never seen before.

• 20 to 50 years >>> Moral/Social Questions, Universal Basic Income, and many others we can’t even imagine.
Thank You

Bob Uhlenkott
Research Director
503-947-1212
Robert.C.Uhlenkott@Oregon.Gov

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