Does Completion Matter?

What is the impact of Registered Apprenticeship on individual wage?
What role does completion, gender, race/ethnicity, age, location of work and education have on the wage?
## Team 5 Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>State</th>
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<tbody>
<tr>
<td>Priyanka Bejugam</td>
<td>Div of Information Systems AR Data</td>
<td>AR</td>
</tr>
<tr>
<td>Lesia Edwards</td>
<td>Dpt of Commerce – Office of Skills Development</td>
<td>AR</td>
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<tr>
<td>Corey Goodrich</td>
<td>Dpt of Workforce Dlvp – Employment and Training</td>
<td>WI</td>
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<tr>
<td>Aimee Jahnke</td>
<td>Dpt of Workforce Dlvp – Employment and Training</td>
<td>WI</td>
</tr>
<tr>
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<td>WI</td>
</tr>
<tr>
<td>Dan Sharp</td>
<td>Madison Area Technical College</td>
<td>WI</td>
</tr>
<tr>
<td>Heather Saco</td>
<td>Div of Information Systems AR Data</td>
<td>AR</td>
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Work Based Learning
“earn while you learn”

Registered Apprenticeship (RA)
- On the Job Training (OJT)
- Related Technical Instruction (RTI)
- Wage Progression –(Contract Requires)
- Nationally Recognized Certification

Sponsor: (responsible for many costs)
- employers, employer associations, labor management organizations, committees
- recruit, set minimum standards, pay wages and training, organize, costs for experienced employees to train and mentor

Government Agencies:
- standards, compliance, operational support, system partnerships
- Incentives, including contract incentives, reimbursement, fund pathways and supports
Registered Apprenticeship

Benefit to Employer:
-skilled workforce to meet demand of jobs

Benefit to Apprentices
-way to acquire skills and earn good wages

Benefit to Communities
-local economic health
-meet demand for workers
-growth and stability

Role of State Agency
Health and Transparency of the System
-outreach and registration
-compliance and quality assurance
-operations and partnership building

Infrastructure Projects + Energy Projects + Healthcare + CHIPS + Worker Shortage

Registered Apprenticeship identified as a tool for positive community outcomes and is incentivized.
Incentives: Pathways for Economic Mobility

• **WIOA Funding** *(local rules apply)*
  – RTI (Classroom Training)
  – OJT potentially 50% of the wages.
  – Supportive services:
• **Grants to State Entities by US DOL**, to promote and expand apprenticeship.*
  – AR: 2.5 Million
  – WI: 16.55 Million

• **State Incentives***
  – Tax Credits for Wage Reimbursement
  – Tuition Support

• **Incentives in Infrastructure** **:**
  – Utilization Rates.
  – Laws include $ for workforce development including RA activities

Our Why: Describe Effectiveness and Align

### Current Measures Used

<table>
<thead>
<tr>
<th>Method</th>
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<tbody>
<tr>
<td>Contract Wage Progression</td>
</tr>
<tr>
<td>Wage Surveys</td>
</tr>
<tr>
<td>Audit or Compliance Reviews</td>
</tr>
<tr>
<td>DOL Evaluation (CLEAR)</td>
</tr>
</tbody>
</table>

### Key Benefits:
- Contracts are enforced, EEOC

### Key Issues:
- ends with contract,
- variation not aligned,
- DOL: One size fits all 6 & 9 years, post enrollment

### Potential: State Level Alignment

<table>
<thead>
<tr>
<th>Feature</th>
<th>Builds Off</th>
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<tbody>
<tr>
<td>Event Based Cohort: “150% Program Length from Enrollment Date”</td>
<td>Educational Concepts:</td>
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<tr>
<td></td>
<td>• Wage at % of Program Length</td>
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<tr>
<td></td>
<td>• Completers vs Non Completers</td>
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<tr>
<td>UI Quarterly Wage for Earnings</td>
<td>Workforce Concepts</td>
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<tr>
<td></td>
<td>• WIOA use of UI Wage</td>
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<tr>
<td></td>
<td>• Individuals who exit.</td>
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</tbody>
</table>

### Key Benefit:
Repeatable, aligned, sized right, potential for states use in regular repeating reports.

### Key Issue: Information vs Performance
Must know your audience and purpose!
Employer Sponsor vs Government Investment
Background: Trends in RA Measures

- **DOL RA Results Statistics**
  - Focus on Growth and Equity
  - ETA Research

- **Wisconsin State Committee Reports**
  - Descriptive Statistics: Committees, Growth, and EEOC
  - Active Trade Trainers:

- **Wisconsin Technical College System**
  - Survey: Satisfaction, Continuing Education, Earnings
    - Apprenticeship Completion | WTCS (wtcsystem.edu)

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<table>
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<tr>
<th>Measure</th>
<th>Results</th>
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<tr>
<td>New Apprenticeships</td>
<td>64% growth since 2012</td>
</tr>
<tr>
<td>Total Served</td>
<td>2 Million +</td>
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<tr>
<td>Active Apprenticeships</td>
<td>22% more active than 10 year average</td>
</tr>
<tr>
<td>New Programs</td>
<td>14,700 + in last 5 years</td>
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</table>

- 97% of apprentices were satisfied with their related instruction
- 40% of apprentices were considering continuing their education
- Apprentice earnings are significantly higher than the Wisconsin average:
  - $80,000
    - Median salary for all apprenticeships
  - $89,100
    - All Other Sectors
  - $75,633
    - Industrial Sector

- New Apprenticeships: 64% growth since 2012
- Total Served: 2 Million +
- Active Apprenticeships: 22% more active than 10 year average
- New Programs: 14,700 + in last 5 years
### Background: Key Terms

<table>
<thead>
<tr>
<th>FY 2021</th>
<th>AR (OA)</th>
<th>WI (SAA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>7,199</td>
<td>11,190</td>
</tr>
<tr>
<td>Completers</td>
<td>592</td>
<td>1,763</td>
</tr>
<tr>
<td>Total Served</td>
<td>7,791</td>
<td>12,953</td>
</tr>
<tr>
<td>New Apprentices</td>
<td>3,118</td>
<td>3,122</td>
</tr>
<tr>
<td>Active Programs</td>
<td>132</td>
<td>1,122</td>
</tr>
<tr>
<td>New Programs</td>
<td>14</td>
<td>85</td>
</tr>
<tr>
<td>Current Expansion</td>
<td>2.45 Million</td>
<td>16.55 Million</td>
</tr>
</tbody>
</table>

- **OA vs SAA State**
  - DOL - Office of Apprenticeship
  - State Apprenticeship Agency

- **Statuses**
  - Exited = (Completed, Canceled)
  - Active = No Exit

- **Expected Program Length (EPL)**
  - Enrollment to Expected Completion

- **150 % Expected Program Length**
  - 1.5 * Expected Program Length
  - Used for cohort definition
Research Question

• What is the impact of RA programs on individual wage?

• What role does program completion, gender, race/ethnicity, age, education and location of work have on wage?

Analytical Framework

• Event Study Approach:

• Cohort:
  • Canceled or Completed and  
  • 150% EPL Date between 2016-2019

• Multi Variable Regression
  • Wage at 100% EPL  
  • Wage at 150% EPL

• Testing: Completion  
  • Gender, Race/Ethnicity/Age, Location of Work, Education
Research Question

• What is the impact of RA programs on individual wage?

• What role does program completion, gender, race/ethnicity, age, education and location of work have on wage?

Research Question: What is the relationship between independent variables and dependent variables?

Dependent Variable: Wage

What is the estimated effect of the independent variables?
• Program Completion (RA Programs)
• Gender
• Race/Ethnicity
• Age
• Location of Work
**Research Question**

• What is the impact of RA programs on individual wage?
• What role does program completion, gender, race/ethnicity, age, education and location of work have on wage?

**Analytical Framework**

• Event Study Approach:
  • Cohort:
    • Canceled or Completed and
    • 150% EPL Date between 2016-2019
  • Multi Variable Regression
    • Wage at 100% EPL
    • Wage at 150% EPL
• Testing: Completion
  • Gender, Race/Ethnicity/Age, Location of Work, Education

**Question:** What is the relationship between independent variables and dependent variables?

**Dependent Variable: Wage**

What is the estimated effect of the independent variables?

• Program Completion
• Gender
• Race/Ethnicity
• Age
• Location of Work

**Analytical Framework:**

• Who we include = cohort and time period.
• How: Testing more than one independent variable, individually, while holding all else constant, to better understand the effect of each factor.
• What specifically we are measuring.
Data Details

- **RAPIDS**: (Registered Apprenticeship Partners Information System)
  - Apprentices Characteristics and Contract Details
- **UI Quarterly Wage File**
  - 2008-2019 Wages
  - Covered Employment
  - Only AR
- **Outcome Measures**
  - Complete vs Not Completed
  - Annual Wage
  - Quarterly Wage

Cohort Details

All AR Apprentices

Exited Apprentices: Canceled or Completed

Apprentices with 150% EPL Date between 2016-2019

Remove those without UI wage match or other variables of interest for regression analysis

- 2,950 Observations
- 1,300 Observations
Key Findings: Does Completion Impact Wages?

• Does Completion Impact Wages?
  
  • Suggestive evidence, completion has a positive and significant impact on wage outcomes.
    – Statistically and Economically Significant
    – 40% higher earnings per year on average.

• Other Factors Tested?
  – Gender, Race/Ethnicity, Age, location of work, and reported education at entry.

• Results:
  – Being white non-Hispanic did effect wage.
  – Statistically and Economically Significant,
  – White non-Hispanic individuals in our sample, holding all else constant, made 23% higher wages than their counterparts

Important Notes

• Deeper Questions Raised:
  – Descriptive analysis, suggests completers start at higher levels of wages, and exhibit similar wage growth as non completers.

• Results are Similar Across Apprenticeship Type:
  – Among types that have a large enough sample size, Plumber and Electrician, we see similar wage differences between completers and non completers

• Wage Missingness:
  – Significant difference in % of individuals that have UI wage data between completers and non completers.
Cohort Wages and Use of Reference Quarter

What is this story?
What question does it raise?
Why would program staff want to see this?

Missedness:
Only show people with UI wage match. Significant difference in the % of matches between C and NC.

T=0 is the event we are interested in (100% EPL Date Quarter)
Descriptive Data: **Cohort** Enrollment and Completion

**What is this story?**

**What question does it raise?**

**Why would program staff want to see this?**
**Descriptive Data: Cohort Enrollment and Completion**

- What is this story?
- What questions does it raise?
- Why do we care?
- What other slices of the data would be helpful?

**Why no % completion for Gender?**

Size of sample, disclosure rules, and order of rounding, led to picture telling an inaccurate story. *This is data governance!*
Caveats and Limitations

• Education Variable:
  – Changes in education not tracked.

• Occupation:
  – Changes in occupation not tracked.

• Wage:
  – removed ½ our cohort from regression due to no wages, we can not infer lack of wages = 0.

• If there are inherent difference between completers and non completers we are not able to test for that.

• Can we still use the results?
  – YES, it is a first step.
  – They tell us a relationship.
  – They paint one part of the story.

• Positive Impacts:
  – Descriptive Data Images
  – Cohort Design for Future Analysis and Trend Analysis
  – Growing: Body of knowledge, tools, capacity and improved data quality.
Future Questions

• Are there characteristics of the employer, RTI training providers, or committee characteristics that influence completion?

• What stage do non completers leave?

• How do occupations of non completers change after their apprenticeship is canceled?

• Potential Policy Importance
  – Identify if there are other characteristics
  – Hypothesize solutions and test them out.