

Guided Pathways Institute

Practical Considerations for Utilizing Career Data

Dr. Todd Oldham

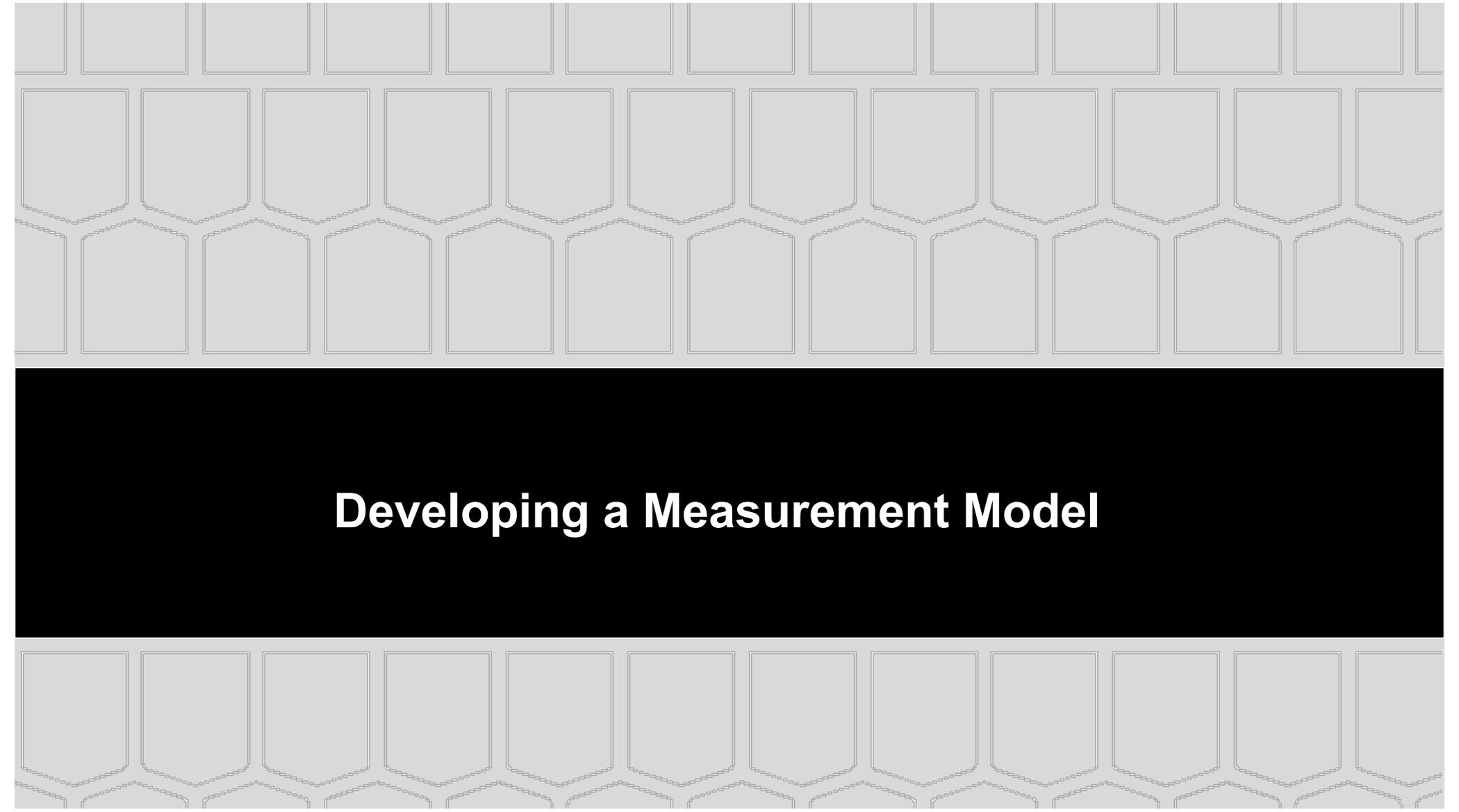
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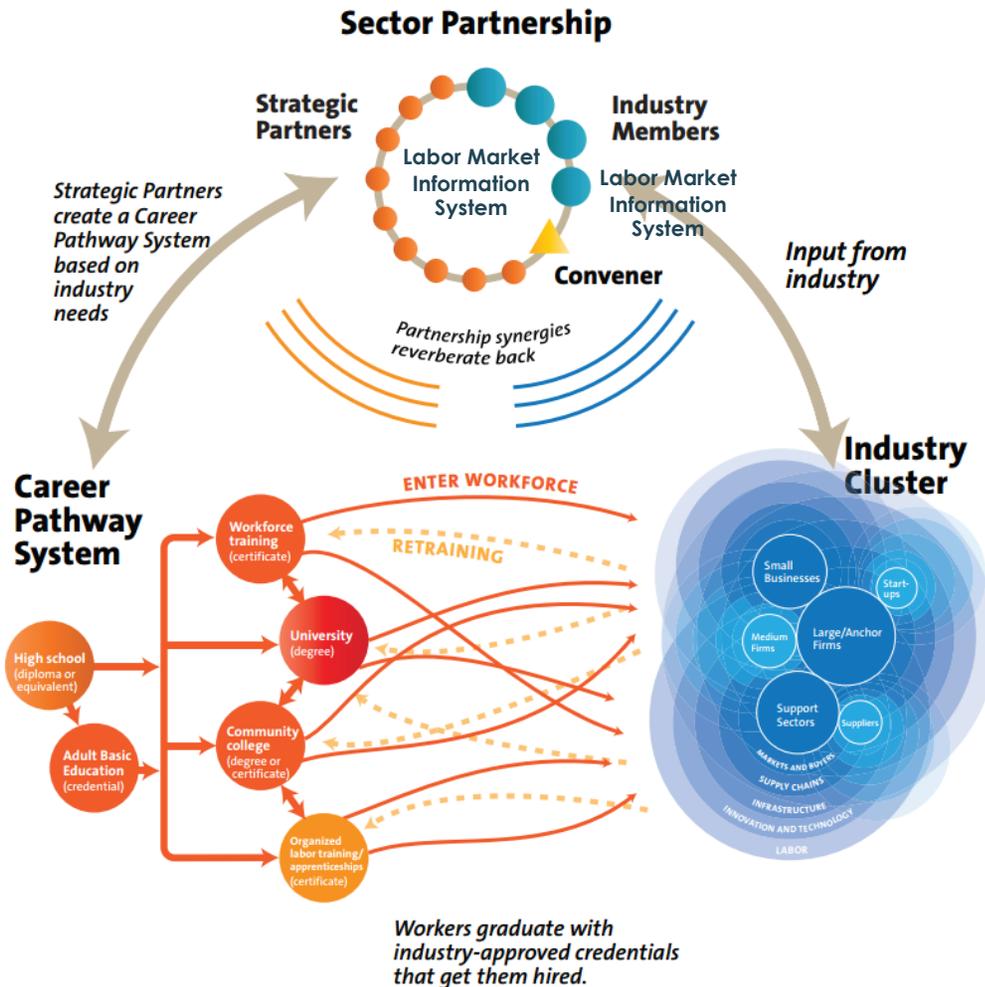
**Economic & Workforce
Development Center**

MONROE COMMUNITY COLLEGE



Developing a Measurement Model

Labor Linking & Careers Pathways



Support for economic development and workforce development partners focused on increased need for access to qualified technical workers

Source: [National Governors Association: State Sector Strategies Coming of Age](#)



Measuring a Career Pathway?

- Create an evaluation framework
- Moving from *estimated* labor outcomes to *actual* labor outcomes
- Translate the data into meaningful change
- Being prepared to organize and provide access to curricula in new ways
- Measuring results
- Working across education and industry partners to align resources and programs – regionally
- Augment operations for improvement and impact

The Basic Research Questions to Guide Your Work



1. What are the occupations or job titles that are aligned to the Institution's programs?
2. What percent of the estimated demand is possible to be filled through the formal education system in the region where the demand is occurring?
3. What are graduates employed in aligned occupations earning in the local labor market, over time, post-graduation?

What transferable skillsets are involved within their career path?

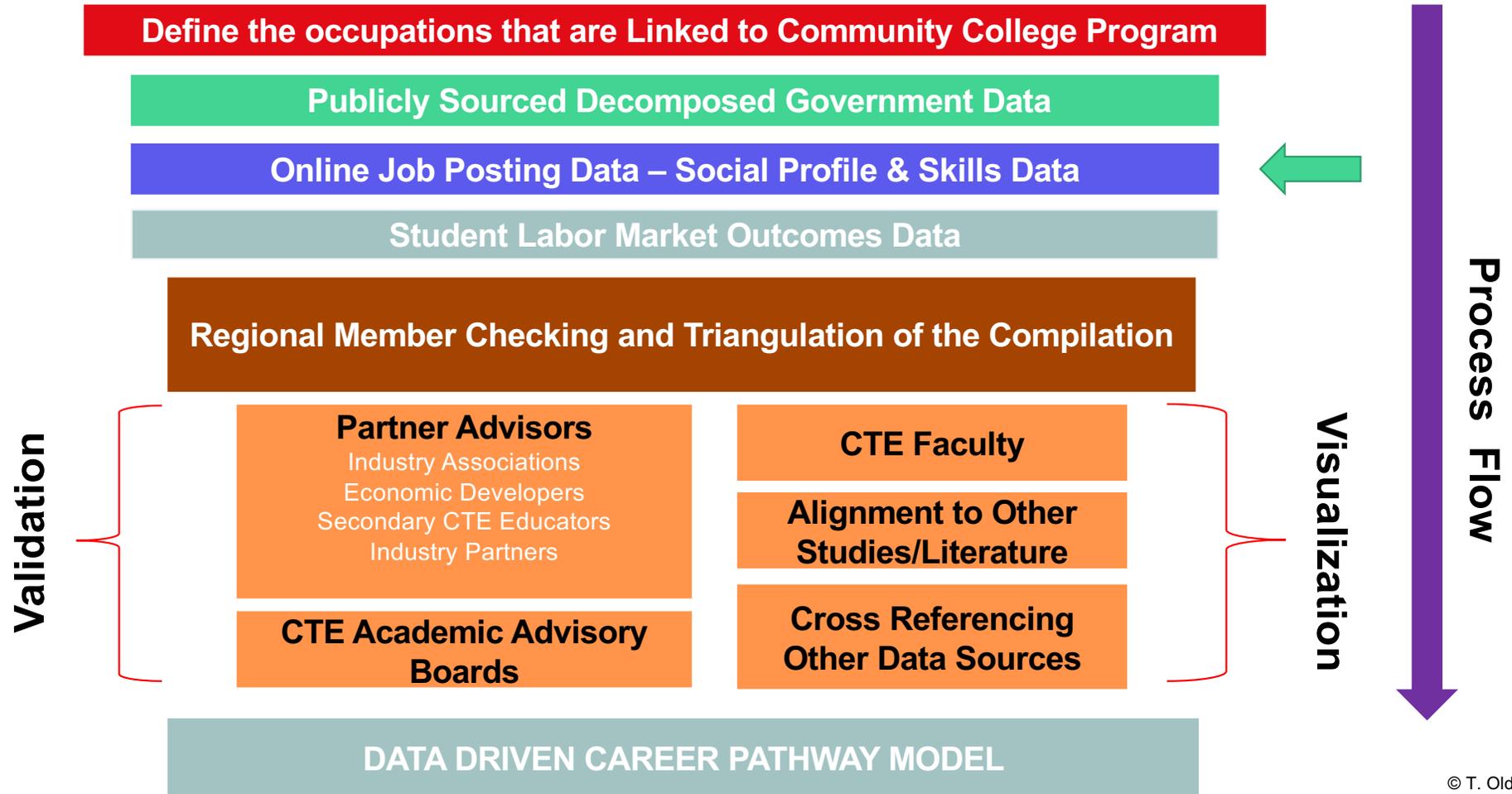
1. How do non-completers working within the career pathway perform in comparison to graduates that have obtained a credential?

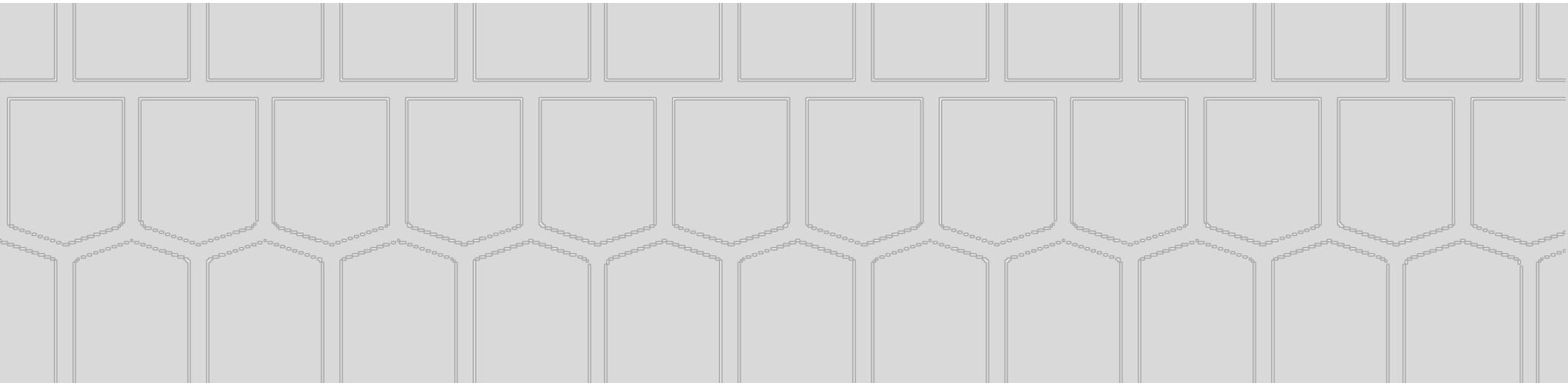
Variables to Consider When Evaluating a Career Pathway



- Occupations Linked/Mapped and Aligned to College programming
- Occupational Demand and Industry Growth (Replacement & New)
- **Regional Supply (Completions) and Demand Analysis**
- Wages & Time for Wage Progression
- Benefits as a Percent of Total Compensation*
- Index to Regional Self-Sufficiency Standards & Metrics
- Occupational Churn and Attrition
- Occupational Demographics – 10 Year Age Out Rate
- **Credentials, Competencies and Skills required by employers and students**
- Ability of workers to ladder to next step occupations within the career pathway(s)

Compiling a Regional Dataset





Where to Start?



1. OCCUPATIONAL
GROUP DEFINITION2. OCCUPATIONAL
CHURN AND
ATTRITION

3. WAGE ANALYSIS

4. GAP ANALYSIS

5. IMPACT ANALYSIS

6. HIRES DATA

7. REAL-TIME LABOR
MARKET DATA

Map Programs to Occupations

Standard Occupational Classifications (SOC), occupations, wages and estimated demand.

ABOUT

SOC	Occupations	WAGES			Growth	Replacements	Openings
		10th Percentile	50th Percentile	90th Percentile			
17-3012.01	Electronic Drafters	17.37	27.69	42.74	2	16	18
17-3012.02	Electrical Drafters						
17-3023.01	Electronics Engineering Technicians	13.87	24.17	37.14	2	56	59
17-3023.03	Electrical Engineering Technicians						
17-3024.00	Electro-Mechanical Technicians	18.19	26.81	42.65	0	4	5
49-2021.00	Radio, Cellular, and Tower Equipment Installers and Repairers	15.44	17.49	20.48	0	4	5
49-2022.00	Telecommunications Equipment Installers and Repairers, Except Line Installers	15.83	28.76	41.21	2	51	53
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	17.47	25.31	33.13	2	16	18
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	25.95	37.41	58.16	1	6	7
49-2097.00	Electronic Home Entertainment Equipment Installers and Repairers	13.33	20.26	24.49	1	28	29
51-4012.00	Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic	18.22	25.33	32.15	4	23	27
51-4035.00	Milling and Planing Machine Setters, Operators, Tenders, Metal and Plastic	15.03	21.84	29.67	1	29	30
Averages & Total		\$17.07	\$25.51	\$36.18	16	234	251

Examining a Basic Framework of Occupational and Skills-based Analysis



<https://mcclmi.com/report/mechanical-engineering-technologies-finger-lakes-ny/>

Monroe Community College 2003-2017 Graduate Wage Outcomes | New York State



Economic & Workforce Development Center
MONROE COMMUNITY COLLEGE

Major Metro Self Sufficiency Standard (SSS): 

✓ **\$18/hr**

1 adult, 1 child (2010)

✓ **\$25/hr**

2 adult, 1 child (2010)



Monroe CC Students

Regional Comparison

Program	Hourly Wage 5th Year	% Change at 5th Year	\$ Increase at 5th Year	Est. Return on Education	50th Percentile for CC Group	% of 50th Percentile	% of Self-Sufficiency for 1 Adult & 1 Child	% of Self-Sufficiency for 2 Adult & 1 Child	% of 4-Year Degree Wage in the Region
ELECTRICAL ENGINEERING TECHNOLOGY AAS	\$23.47	7.2%	\$8.04	24.4%	\$26.32	89.2%	127.8% ✓	93.9%	87.6%
MECHANICAL ENGINEERING TECHNOLOGY AAS	\$24.46	10.2%	\$10.83	20.8%	\$25.90	94.4%	133.2% ✓	97.8%	91.3%
OPTICAL SYSTEM TECHNOLOGY AAS	\$23.81	11.9%	\$10.83	25.5%	\$23.34	102%	129.7% ✓	95.2%	88.9%
TOOLING AND MACHINING AAS	\$20.55	9.9%	\$8.91	26.7%	\$19.53	105.2%	111.9% ✓	82.2%	76.7%

Monroe Community College 2003-2017 Graduate Wage Outcomes | New York State



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Major Metro Self Sufficiency Standard (SSS): 

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1 adult, 1 child (2010)

✓ **\$25/hr**

2 adult, 1 child (2010)



Applied Technologies

Monroe CC Students

Regional Comparison

Program	Hourly Wage 5th Year	% Change at 5th Year	\$ Increase at 5th Year	Est. Return on Education	50th Percentile for Peer Group	% of 50th Percentile	% of Self-Sufficiency for 1 Adult & 1 Child	% of Self-Sufficiency for 2 Adult & 1 Child	% of 4-Year Degree Wage in the Region
AUTOMOTIVE TECHNOLOGIES AAS	\$16.91	11.3%	\$8.00	17.7%	\$17.02	99.4%	92.1%	67.6%	63.1%
CONSTRUCTION TECHNOLOGIES AAS	\$20.67	15.0%	\$11.76	18.1%	\$25.13	82.3%	112.6% ✓	82.7%	77.2%
HVAC AAS	\$20.16	12.2%	\$10.08	28.8%	\$23.89	84.4%	109.8% ✓	80.6%	75.3%
HVAC: TECHNOLOGISTS & HELPERS CERTIFICATION	\$18.58	11.1%	\$8.71	28.8%	\$21.57	86.1%	101.2% ✓	74.3%	69.4%
WELDING NON-CREDIT CERTIFICATION	\$18.65	8.9%	\$7.44	38.5%	\$15.93	117.1%	101.6% ✓	74.6%	69.6%

Monroe Community College 2003-2017 Graduate Wage Outcomes | New York State



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Major Metro Self Sufficiency Standard (SSS): 

✓ **\$18/hr**

1 adult, 1 child (2010)

✓ **\$25/hr**

2 adult, 1 child (2010)



Health Care

Monroe CC Students

Regional Comparison

Program	Hourly Wage 5th Year	% Change at 5th Year	\$ Increase at 5th Year	Est. Return on Education	50th Percentile for Peer Group	% of 50th Percentile	% of Self-Sufficiency for 1 Adult & 1 Child	% of Self-Sufficiency for 2 Adult & 1 Child	% of 4-Year Degree Wage in the Region
DENTAL ASSISTING CERT.	\$16.95	2.8%	\$2.61	28.5%	\$19.75	85.8%	92.3%	67.8%	63.3%
DENTAL HYGIENE AAS	\$18.22	20.2%	\$12.17	27.4%	\$29.33	62.1%	99.2%	72.9%	68.0%
NURSING AAS	\$27.14	9.2%	\$11.11	22.5%	\$30.68	88.5%	147.8% ✓	108.6% ✓	101.3%
RADIOLOGIC TECHNOLOGY AAS	\$20.49	12.7%	\$10.51	24.4%	\$30.85	66.4%	111.6% ✓	82.0%	76.5%

Monroe Community College 2003-2017 Graduate Wage Outcomes | New York State



Economic & Workforce Development Center
MONROE COMMUNITY COLLEGE

Major Metro Self Sufficiency Standard (SSS): 

✓ **\$18/hr**

1 adult, 1 child (2010)

✓ **\$25/hr**

2 adult, 1 child (2010)

 **Information & Computer Tech**

Monroe CC Students

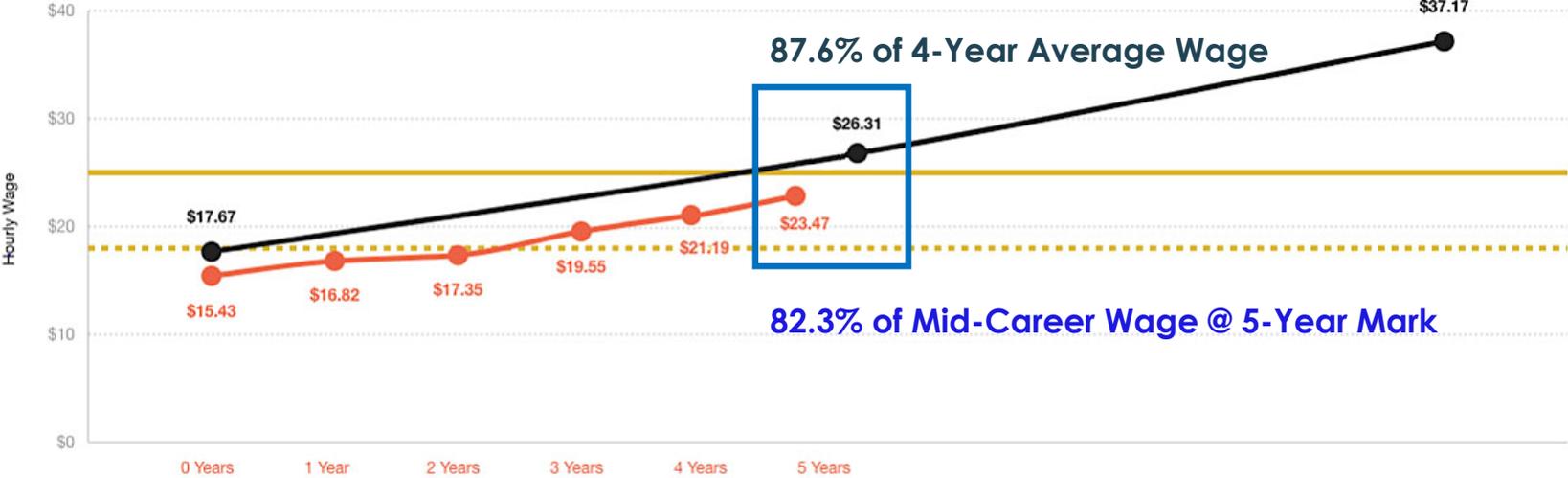
Regional Comparison

Program	Hourly Wage 5th Year	% Change at 5th Year	\$ Increase at 5th Year	Est. Return on Education	50th Percentile for Peer Group	% of 50th Percentile	% of Self-Sufficiency for 1 Adult & 1 Child	% of Self-Sufficiency for 2 Adult & 1 Child	% of 4-Year Degree Wage in the Region
COMPUTER SCIENCE AS	\$25.27	7.5%	\$8.94	19.7%	\$35.09	69.2%	132.2% ✓	97.1%	90.6%
COMPUTER INFORMATION SYSTEMS AAS	\$21.84	9.1%	\$8.92	20.4%	\$36.85	59.3%	119.0% ✓	87.4%	81.6%
COMPUTER SYSTEMS TECHNOLOGY AAS	\$20.55	8.9%	\$8.22	21.1%	\$26.75	76.8%	111.9% ✓	82.2%	76.7%
INFORMATION TECHNOLOGY AS	\$18.36	10.6%	\$8.32	Unavail.	\$30.53	60.1%	100.0% ✓	73.4%	68.6%

Electrical Engineering Technology



SHOW CLASS EARNINGS CURVE



- Total Workforce Wages for Occupational Group (10th, 50th and 90th percentile)
- 5-Year Median Wage MCC Graduates in Related Programs
- \$25 Self-sufficiency standard for 2 adults + 1 preschooler (Monroe County, NY)
- \$18 Self-sufficiency standard for 1 adult + 1 preschooler (Monroe County, NY)

Understanding the Impact to the Student / Future Worker

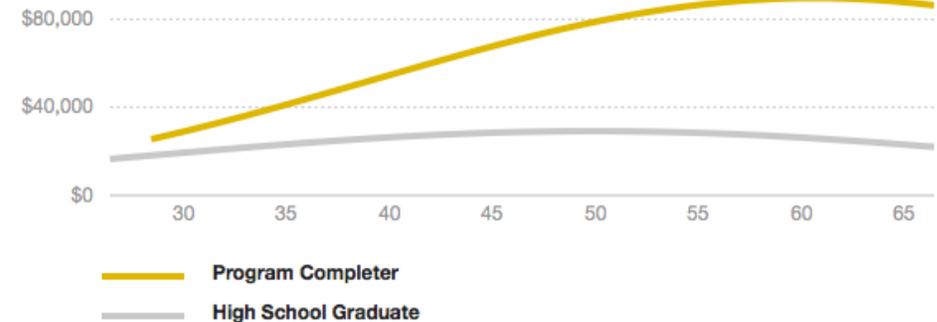


Student Return on Investment.

For every dollar students invest in their education in the Electrical Engineering Technologies program at MCC, they will receive an estimated \$9.70 back over the course of their working lives. This investment provides a 24.4% rate of return. This is a favorable return, especially when compared to the U.S. stock market 30-year average return of 10.1%.

Lifetime Earnings.

Average Annual Earnings





What Defines a Powerful Career Pathway?

Creating a Rubric for Evaluation

Example criteria to consider. Within five years:

- Attained 85% of peer occupational group median wage in 5-years
- Positive year-over-year wage growth for student cohorts
- Met or passed local self-sufficiency standards
 - 1) Single Parent - \$18 hr.
 - 2) Two working parents + 1 preschooler - \$25hr
- Achieved 60% attainment of four-year average wage
- Performance metrics for students of color and females

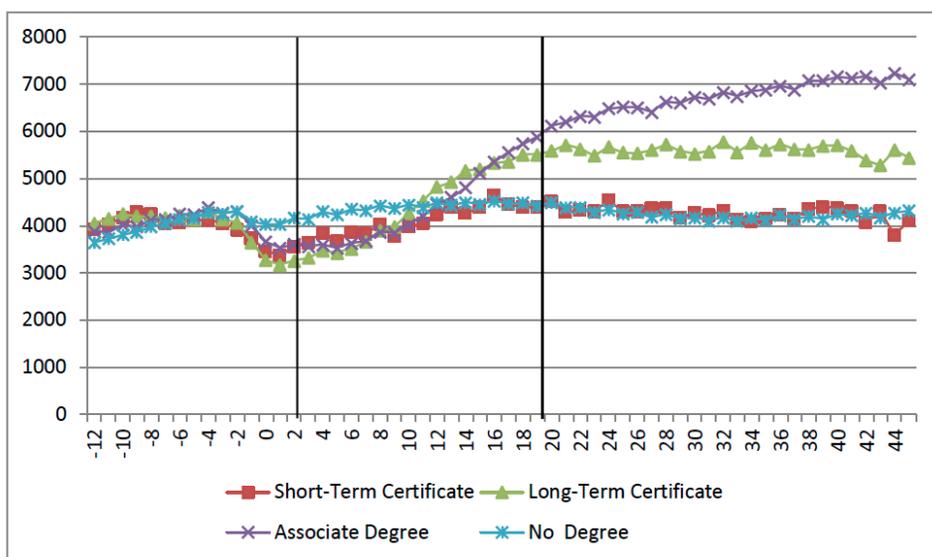
Overall:

- Significantly greater lifetime earnings over lower skill occupation and moving away from occupations vulnerable to automation risk

CAPSEE: Labor Market Trajectories for Community College Graduates: New Evidence Spanning the Great Recession (April 2017)

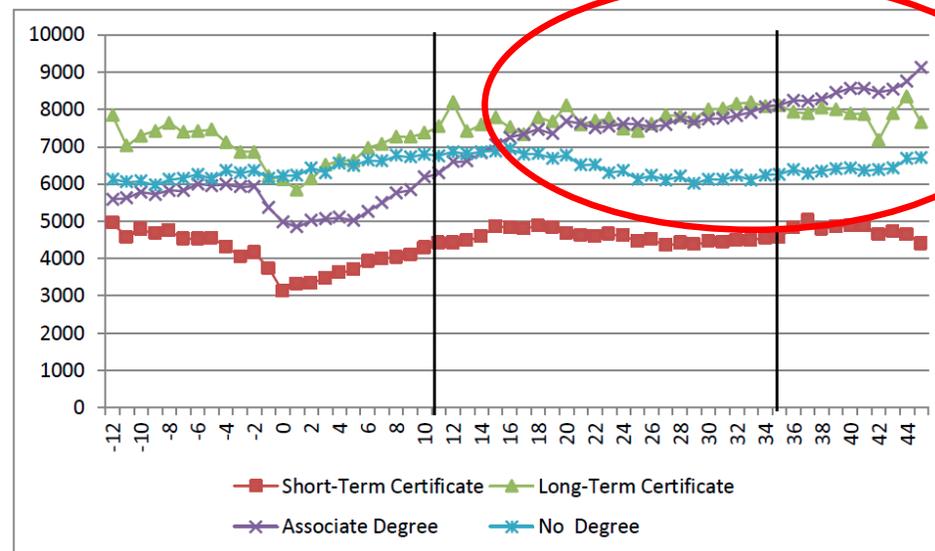


Figure 1a: Quarterly Earnings by Quarters Since First Entry—Women



Note. Fall 2001–spring 2004 first-time college entrants to two-year institutions followed through 2013Q1. Each quarter is measured relative to initial entry. The lines on the graph show the follow-up period of Jepsen et al. (2014), which goes through the fourth quarter of 2008.

Figure 1b: Quarterly Earnings by Quarters Since First Entry—Men



Note. Fall 2001–spring 2004 first-time college entrants to two-year institutions followed through 2013Q1. Each quarter is measured relative to initial entry. The lines on the graph show the follow-up period of Jepsen et al. (2014), which goes through the fourth quarter of 2008.

Source: <https://ccrc.tc.columbia.edu/media/k2/attachments/labor-market-trajectories-community-college-graduates-R1.pdf>



Applications of Skills and LMI

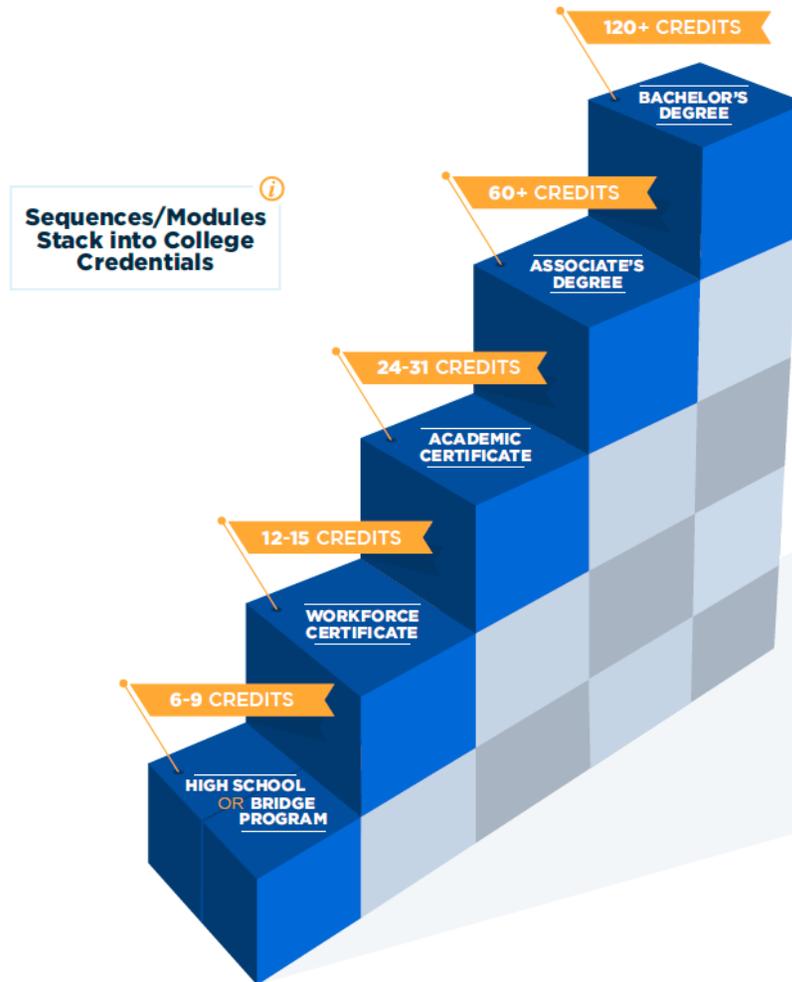


Modularized Educational Pathway



 Sequences/Modules Stack into College Credentials

Modularized Educational Pathway



Future of Work: Industry 4.0



- ✓ Smart Cities
- ✓ Manufacturing
- ✓ Healthcare
- ✓ Service Industries
- ✓ Integrated IT
- ✓ Transportation
- ✓ Hospitality

Transitioning the Workforce – Industry 4.0



McKinsey & Company

MCKINSEY GLOBAL INSTITUTE

JOBS LOST, JOBS GAINED: WORKFORCE TRANSITIONS IN A TIME OF AUTOMATION

DECEMBER 2017

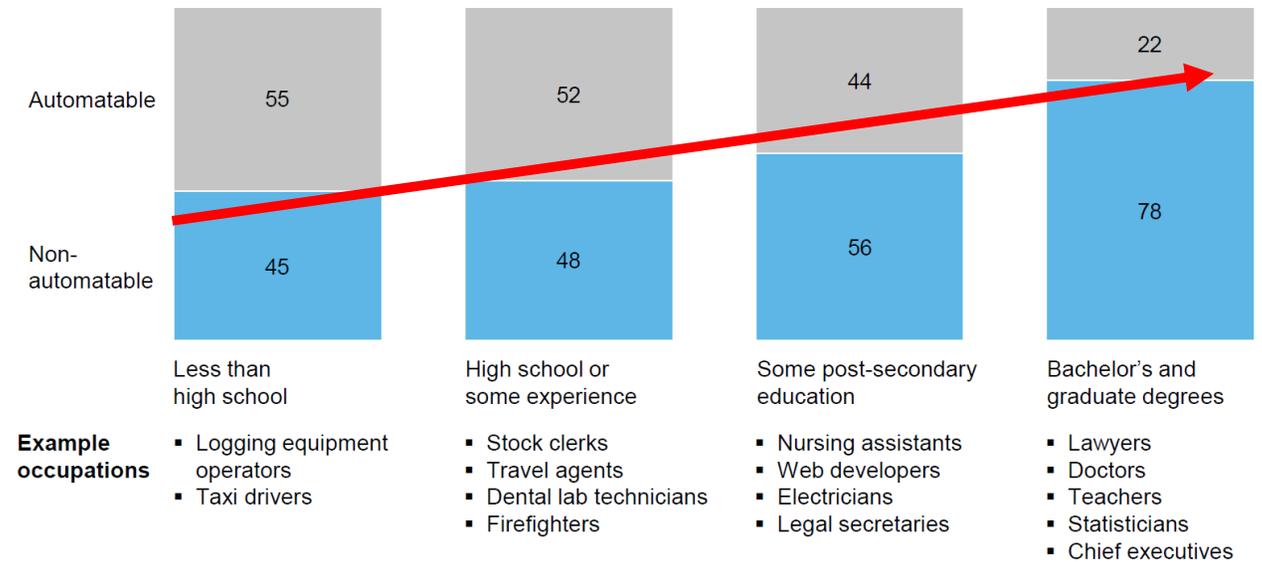


Exhibit 4

Occupations requiring higher levels of education and experience have lower automation potential

Technical automation potential of work activities by job zone in the United States

%



NOTE: We define automation potential according to the work activities that can be automated by adapting currently demonstrated technology.

SOURCE: US Bureau of Labor Statistics; O*Net; McKinsey Global Institute analysis

Workforce Skills and Demand Analysis: Finger Lakes Region First Quarter 2020

The Economic and Workforce Development Center has developed this briefing document which is intended to provide a quarterly presentation of key workforce development indicators within the 9-county Finger Lakes region. The presentation of labor market data includes information on the local workforce demand based on analyzing both traditional labor market data as well as on-line job postings through the lens of career pathways and career clusters. The analytical framework used to present data in this brief is intended to evolve over time and has been designed to inform both career technical educators and training programs linked to job opportunities in the regional economy.

One area of focus within the reporting template is moving beyond a focus on traditional publicly sourced labor data, to also monitoring demand for skills and skill clusters most frequently sought by employers through on-line job postings. This approach provides a new skills-based and competency-based perspective on employer and industry need rather than relying alone on the traditional approach of focusing on demand for occupations, degrees and job titles. This brief also presents local labor market data according to the National Career Clusters* Framework which serves as a recognized organizing tool for Career Technical Education (CTE) programs, curriculum design and instruction.

Order of Data Presentation:

16 Career Cluster Demand and Wage Table	Page 1
Most Advertised Job Postings	Page 2-4
Analysis of 16 Career Clusters	Page 5-6
Most Frequently Advertised Occupations & Skills By Education Level	
-High School & Less than Associate's Degree	Page 7-10
-Associate's Degree	Page 11-14
-Bachelor's Degree	Page 15-18

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Development Center
Economic & Workforce

PIPELINE DEVELOPMENT

WORKFORCE SKILLS ANALYSIS

SECONDARY SCHOOL PARTNERSHIPS

LABOR LINKED CAREER PATHWAYS

STUDENT OUTCOMES

STUDENT RETENTION



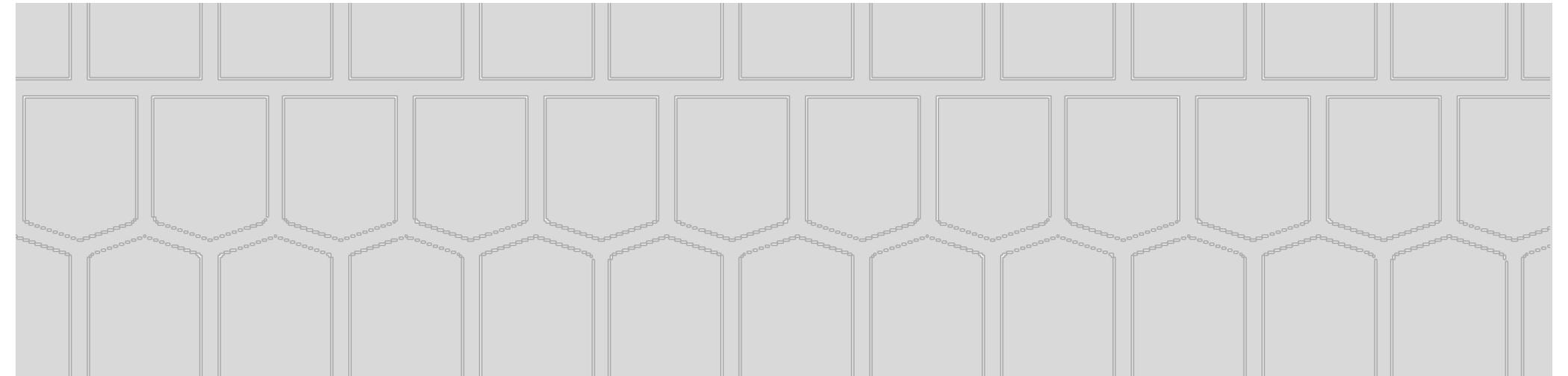
MCC's Workforce Skills and Demand Analysis: Finger Lakes Region First Quarter 2020

Top 25 Certifications In The Greatest Demand | 12 Months

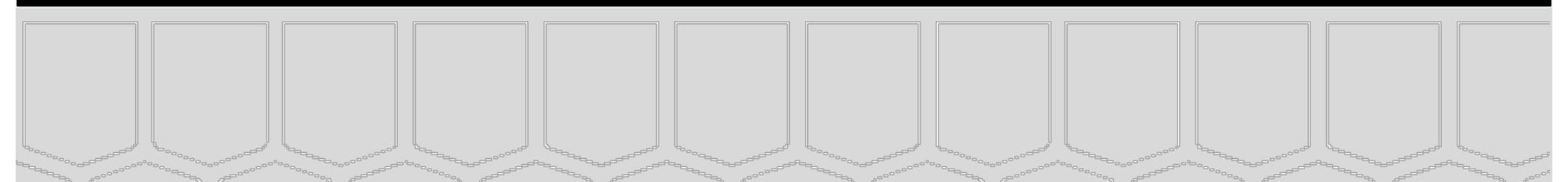
Certifications / High NEW YORK STATE

Job Posting Demand
(2018-2019)





What have we learned?





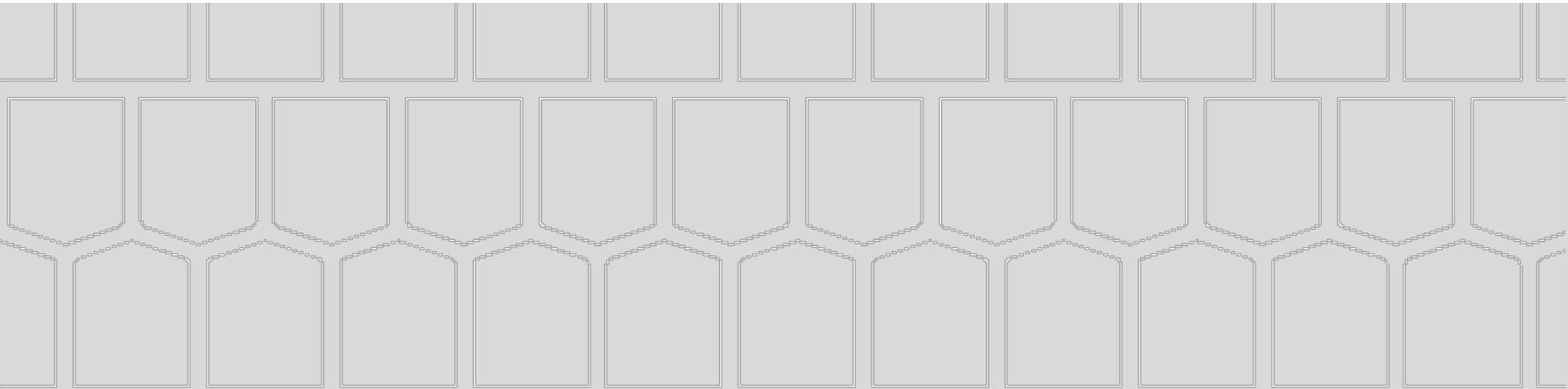
What have we learned over 5+ years at MCC

- Including more data elements into a workforce or gap analysis wage create a more nuanced perspective as to the factors influencing workforce trends (causal variables)
- Start with occupation to program mappings to drive a more complete dataset
- Local validation of compiled regional labor market data is critical to better understand and interpret local workforce dynamics affecting career pathways
- Incorporation of state UI data matched to student data provides a new perspective to rethinking how institutions provide access to education and training as well as how these sequences may be better modularized – *focus on both completers and non-completers*
- Analysis of Graduate Wage Outcomes and Social Profiles suggests support for some career pathways benefiting from microcredentials, short certificates will place students on a positive trajectory for increased wages in a relatively short time frame. Better understanding of these opportunities is needed.
- More work with these approaches needed across other NY State regions to better understand its application for analyzing workforce trends and success of career pathways with market validated “*stackability*”

What have we learned over 9+ years at MCC (cont.)



- Cohort based learning models show promise for both higher rates of retention and completion
- Cohort-based learning models may be a better way to graduate significantly more students for occupations showing large gaps in available supply of the worker to support age out, growth and business attraction
- Incorporating best practices and data from the field of Talent Management/Development and Human Resource Development hold promise to complement traditional and real time labor market sources for workforce practitioners
- Sharing labor market skills and outcomes data is the first step, there must be agents in the local economy capable of translating/interpreting insights from the data into meaningful regional interventions
- **Lack of pipeline of interested students from K12 in Middle-Skilled programs remains one of the biggest barriers to recruit and graduate a greater number of skill-based workers**
- **Need regional education pilots that better link secondary and post-secondary programming along data informed career pathways**



Resources



BETA VERSION 1.0

LABOR MARKET RESOURCES.

Access current and past PDF publications compiled by the Economic and Workforce Development Center.

A Supply and Demand Analysis of 25 Middle-Skill Occupations within the Finger Lakes Region

Occupation	2014	2015	2016	2017	2018	2019	2020	2021	2022
Advanced Manufacturing	1,000	1,050	1,100	1,150	1,200	1,250	1,300	1,350	1,400
Applied Technologies	2,000	2,100	2,200	2,300	2,400	2,500	2,600	2,700	2,800

Monroe Community College 2021-2022 Graduate Degree Outcomes in New York State

Year	Advanced Manufacturing	Applied Technologies
2021-2022	1,350	2,800



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Sources Referenced

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Labor Market Trajectories for Community College Graduates: New Evidence Spanning the Great Recession, <https://ccrc.tc.columbia.edu/media/k2/attachments/labor-market-trajectories-community-college-graduates-R1.pdf>



Questions and Discussion

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