

Mohawk Valley Regional Economic Development Council **Workforce Development Strategy** 2022



Prepared by:



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The Neighborhood Center
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Working Solutions

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Mohawk Valley **Regional Background and Strategies**

Wolfspeed

Introduction

Project Purpose

With businesses across New York State facing a substantial headwind in finding and retaining qualified workers, Empire State Development (ESD) initiated a statewide effort to establish data-driven and stakeholder-informed workforce plans. Using input from job seeker and employer surveys, Department of Labor data, stakeholder interviews, and industry research, each of the state's Regional Economic Development Councils (REDC) was charged with developing sector-specific workforce development strategies to address the critical issues facing their priority clusters.

The priority clusters selected by the Mohawk Valley include:

- **Agribusiness**
- **Finance and Insurance**
- **Tech-Intensive Advanced Manufacturing**

The work was completed throughout the late summer and early fall of 2022 and has resulted in workforce development strategies that address regional issues as well as sector-specific challenges. The following document outlines the work completed as part of this effort as well as the findings and recommendations.

Engagement Activities

Between September 12 and October 14, the project team spoke with 21 stakeholders across 17 interviews, conducted via Zoom. The project team worked with the REDC to identify potential interviewees and collect contact information.

The overall objective of stakeholder engagement was to inform the development of actionable workforce development strategies through conversations with key stakeholders.

Data Analysis

The project team analyzed the current environment of the region to estimate the workforce, training, and skills gaps within each tradable cluster. These analyses included:

Background Analysis: Provided background and context for the creation of targeted workforce development strategies for key, tradable industry clusters within the region.

Industry Sector Definition: Included all of the six-digit industries within each cluster.

Staffing Pattern Analysis: Showed the unique occupational makeup of each industry, which allowed for the evaluation of each cluster's workforce needs.

Workforce Gap Analysis: Estimated the gap between the projected supply of workers and the projected new job openings over the next 10 years to determine which occupations are likely to have the largest workforce shortages in the near future. The Top Gap Occupations are the primary focus of the workforce development strategies.

Training Gap Analysis: Identified the training pipeline for the Top Gap Occupations (i.e., those with the largest gaps). For each of the Top Gap Occupations, the training providers within the Region that offer programs related to that occupation (based on a SOC-to-CIP crosswalk) are shown. Not all of the Top Gap Occupations require formal training beyond a high school diploma.

Skills Gap Analysis: Showed the most in-demand skills compared to the skills most commonly held by workers within each cluster.

All data was sourced from Lightcast (formerly EMSI/Burning Glass) and is for 2021 unless otherwise noted.

What We Heard

Mohawk Valley stakeholders identified challenges unique to the region, as well as challenges that employers are facing across the state. Broadly, employers described recruitment and retention challenges in a “job-seekers market,” where they’re facing difficulties keeping workers in the Mohawk Valley, especially among the student population and emerging workforce. As one interviewee put it, “... the 9 to 5 desk job is not what this generation is looking for.” Workforce development organizations and employers alike recognize the need to provide workplace flexibility to retain this segment of the workforce, where expectations are shifting to prioritize quality of life (e.g., flexible hours and access to amenities).

Employers are facing challenges to provide competitive salary packages and note the existing housing stock as a challenge due to inadequate housing supply and high property taxes. Interviewees described the “sticker shock” from people out of state who aren't used to paying New York taxes. Employers noted the importance of and expectation around the provision of wrap-around services in benefits packages (e.g., tuition reimbursement, dog sitting, child care, and daily pay), where businesses are trying to “take care of people.”

There is a renewed focus to promote the “intangibles,” or the lifestyle that opportunities within the region support (e.g., flexibility, upward mobility, being near nature, less stress, etc.). In tandem, a large proportion of the working population is nearing retirement age and employers anticipate challenges in replacing this segment of the workforce. As an interim strategy, employers are thinking creatively about how to keep would-be retirees in the market (e.g., mentorship/training and part-time employment).

The region has benefitted tremendously from the immigrant population that has resettled throughout the Mohawk Valley. The Mohawk Valley is home to a large immigrant and refugee population and over 52 languages are spoken in Utica schools. As one stakeholder put it, “Most employers who move to this area recognize the [immigrant community] will be a key part of their workforce.”

This relationship is supported and sustained by partners like The Center, which assists with language support, onboarding, wraparound service coordination, and understanding of cultural differences to support upward mobility and ensure that this population remains within the region. Anecdotally, this community is staying here because there is a support system. Interviewees identified a need for support for this population to address language barriers and to ensure that this demographic can enter the STEM/tech fields that support upward mobility.

What We Heard (cont.)

Stakeholders from the education sector described the need for innovative, forward-thinking industry collaborations to build and sustain career pathways to meet workforce needs and opportunities available within the region. As one stakeholder put it, “Colleges and universities are now thinking about student relationships over the lifetime. We need to be more nimble to flex with the needs of the evolving workforce. We need to look beyond traditional degrees and think about lifelong learning.”

Stakeholders described an effort to move away from the mentality of traditional degrees, which they noted require a lot of debt, and a renewed focus on elevating technical and trade skills. Educational institutions are hiring executive-level staff to facilitate industry partnerships to meet workforce needs and cultivate pipelines from underrepresented groups (e.g., nontraditional students and military veterans). Internships have always been a key element of educational programs, but there is a renewed focus on hands-on learning in collaboration with industry partners.

The State University of New York system (SUNY) and Hartwick College are partnering with regional anchor institutions/industries to convene a Regional Innovation Council to build an education-to-workforce pipeline that encourages and incentivizes students to stay in the region, including an early employment retention program that will provide employees with a free year of housing if they stay and work locally. SUNY is also launching innovative cross-institutional partnerships to facilitate workforce development, sharing programmatic strengths across institutions.

An example of this cross-institutional partnership is an engineering management program that will span two years at SUNY Delhi to advance technical skills and two years at SUNY Oneonta to advance management and business skills. SUNY Polytechnic Institute has seen an increase in enrollment, especially among the incoming freshman class.

Stakeholders from the educational sector also described partnerships with employers to develop a series of “stackable” micro-credential programs targeted at upskilling mid-career professionals.

Additional challenges and needs identified by stakeholders across the region include:

- A need for greater soft skills development.
- Additional translation services, especially in construction fields.
- Child care subsidization is highly needed. Child care capacity is hindered by a lack of capacity, good pay, and benefits. New York State regulations are also a constraint to establishing onsite care facilities.
- Public transportation is very limited across the region, and some communities have none. Transportation is a particularly intractable challenge for the immigrant population.
- More counselors are needed in high schools to help guide students to opportunities.

What We Discovered



Labor Force

- Labor force participation is lower than the state and national rates and has not yet recovered to pre-pandemic levels.
- Unemployment is at its lowest since at least 2017.
- Over 25% of the population is overqualified for the types of jobs employers are offering (i.e., the labor force's educational attainment is higher than the proportion of jobs that require a Bachelor's degree or higher), which is higher than the state rate but lower than the national rate.
- Higher education enrollments and completions are declining; the vast majority of completions are for college degrees and over 26% are completed through distance learning.
- The top common skills point to strengths in customer service and management, while specialized skills indicate workforce strengths in white-collar jobs.
- The region is a net exporter of labor; most commuters remain within the state for work and have a relatively short commute time.
- The region has a slightly larger proportion of young workers than the state and a larger share of older workers than the state or nation. The age of the workforce is increasing, in keeping with state and national trends.
- The region's workforce is less diverse than the state or nation but has made gains over the past five years, especially among Hispanic or Latino workers.
- The sex composition of the workforce is stable and consistent with broader trends.
- Altogether, there are up to 140,654 working-aged individuals across these nine underserved populations who could potentially be activated within the workforce given the right support and circumstances (90% are not in the labor force; 10% are unemployed).
- The underserved populations that have the highest jobless rates include older workers, teens, and males and females in poverty. The underserved populations that would have the greatest impact in terms of expanding the workforce include older workers, teens, and females below the poverty line.

What We Discovered (cont.)



Demographics

- The region's population is on a long-term declining trajectory, in keeping with state trends.
- There are fewer millennials and a higher retirement risk than expected; all counties within the region are significantly older than the state and nation.
- While racial diversity is low, it is increasing at a faster rate than the state, but it lags national trends.
- Educational attainment is lower than the state and nation; the high school graduation rate is slightly lower than the state's rate while dropouts are slightly higher.
- Poverty is relatively high while median household income varies across the region.
- The region is a net exporter of population; 97% of inbound migration originates within state and 86% of outbound migration remains within state.



Economy

- Jobs have been in decline over the past five years following state trends, but at double the pace; less than a quarter of those jobs are projected to be recovered by 2026.
- While average earnings have increased significantly, they are lower than the national average and significantly below the state average.
- The region's share of the state's Gross Regional Product (GRP) is low relative to its share of population and jobs; its workers are less productive than the nation and State.
- Services for the Elderly and Persons with Disabilities, Hospitals (State Government), and Direct Life Insurance Carriers are some of the region's top industries in terms of job growth, concentration, and competitiveness.

Demographics



Population
478,827

- 2.5% of the state's population
- **Decreased by 8,317 over the last five years** (-1.7% compared to -1.7% for the state and 2.7% for the US)
- **Projected to decrease by 9,707 over the next five years** (-2%, compared to -1.8% for the state and 2.6% for the nation)

* Projections are based on historic trends and do not account for recent private investment announcements.



Median Age
40.8–45.8
Range across region

- With a range of five years, the median age is fairly consistent across the region (lowest: Oneida County; highest: Schoharie County)
- All six counties are **older than the state** (39) **and the nation** (38.2)
- **Fewer millennials than expected** for an area this size (85,059 compared to 98,937)
- **Higher retirement risk than expected** for an area this size (142,892 compared to 168,057)



Diversity
14.7%
BIPOC Share of Population

- **Increased by 6,698 over the last five years** (+1.6% compared to +1.3% for the state and +1.9% for the US)
- **Racial diversity is lower than expected for an area this size** (68,740 racially diverse people compared to 193,379)



Educational Attainment
25.1%
Bachelor's Degree +

- **12.6% lower than the state rate** of 37.7%, and **8% lower than the national rate** of 33.2%
- **The high school graduation rate is 86.4%** (+1.7% increase since 2011), which is **lower than the state's rate** (88%)*
- **The high school dropout rate is 9.2%** (-0.4% decrease since 2011), which is **higher than the state's rate** (8%)*

* Six-year outcomes, NY State Education Department



Household Income
\$50,146–\$59,113
Range across region

- With a range of \$8,967, **median household income varies across the region** (lowest: Montgomery County; highest: Oneida County)
- **All six counties have lower household incomes than the state** (\$71,117) **and nation** (\$64,994)
- Poverty rate ranges from 6.3% (Schoharie County) to 13.4% (Montgomery County), and only three counties have less poverty than the state (10%) while two counties have less poverty than the nation (9.1%)



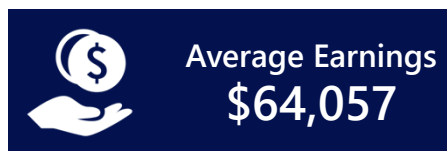
Average Net Migration
-1,059
2016–2020

- **The region is a net exporter of population** with an average of 10,389 migrating into the region and 11,448 migrating out per year
- **In 2020, 96.9% of in-migration originated within the state, while 86.1% of out-migration remained within the state**
- In 2020, the top originating counties included: Madison County, NY (6.7%), Schenectady County, NY (6.5%), Albany County, NY (5.1%)
- In 2020, top destination counties included: Madison County, NY (6.8%), Onondaga County, NY (5.0%), Saratoga County (4.6%)

Economy



- 2% of the state's jobs
- **Decreased by 14,040 over the last five years** (-6.8% compared to -3.2% in the state and +1.8% in the nation)
- **Projected to grow by 2,921 over the next five years** (+1.5% compared to +3% in the state and +4.3% in the nation)
- **20.8% of the jobs lost in the past five years are projected to be recovered by 2026**



- \$37,061 **below the state average** of \$101,118 and \$13,742 **below the national average** earnings of \$77,799
- **Grew by 26.9% since 2016** (average growth of 27.4% across all industries)



- **1.3%** of the State's GRP, which is low relative to the region's share of the state's population (2.5%) and jobs (2%)
- **Productivity is at \$123,639 per worker**, which is \$65,692 lower than the state, and \$15,480 lower than the nation



- Services for the Elderly and Persons with Disabilities: +1,843
- Hospitals (State Government): +1,139
- Direct Life Insurance Carriers: +693
- Financial Transactions Processing, Reserve, and Clearinghouse Activities: +631
- State Government, Excluding Education and Hospitals: +383

* i.e., job growth or decline cannot be explained by national or industry trends



- Leather and Hide Tanning and Finishing: 77.8
- Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding: 46.7
- Copper Rolling, Drawing, Extruding, and Alloying: 28.6
- Secondary Smelting and Alloying of Aluminum: 28.1
- Fabric Coating Mills: 23.2

* Compares an industry's share of regional employment with its share at the national level. An LQ of 2.5 would mean the industry is 2.5x more concentrated in the region than in the nation.

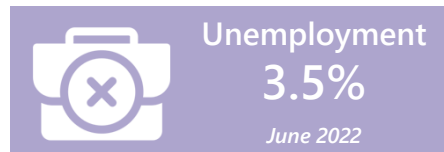


- Services for the Elderly and Persons with Disabilities: +2,733 (78%)
- Hospitals (State Government): +1,151 (1,079%)
- General Warehousing and Storage: +1,092 jobs (28% growth)
- Direct Life Insurance Carriers: +682 (89%)
- Offices of Physicians (except Mental Health Specialists): +475 (13%)

Labor Force



- 2.3% of the state's labor force
 - **Labor force participation rate* of 56.8%**, which is 3.3% lower than the state (60.1%), and 5.7% lower than the nation (62.5%)
 - **Participation rates have not yet recovered to the pre-pandemic rate** of 57.5% (2019)
 - **165,403 missing workers** (not in the labor force), which accounts for 2.6% of the state's total; 47.5% of missing workers are 65+
- * Includes the civilian, noninstitutional population 16+

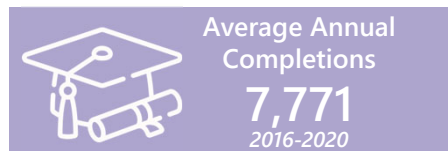


- **7,644 workers are unemployed**, which accounts for 1.8% of the state's total
- Unemployment is 0.9% lower than the state (4.4%) and 0.3% lower than the nation (3.8%)
- Unemployment rates are at their lowest since before 2017
- 45.5% of the unemployed are between the ages of 25 and 44, while 21.6% are BIPOC



- Underemployment is 0.4% higher than the state (25.3%) and 0.5% lower than the nation (26.2%)
- There are **9%** more people with some college, non-degree awards than required by employers; **11%** more with an Associate's Degree; and **6%** more with a graduate degree or higher

* Underemployment = population at educational level – jobs requiring educational level



- 17 institutions operating within the region
- **29,723 enrollments in 2020** (a 6% decrease since 2016)
- **7,702 completions in 2020** (-2.9%)
- **26.3% of completions in 2020 were in distance programs** (-3.9%)
- 95.1% of completions were for degrees; 7,325 degrees were awarded in 2020 (-1.2%)
- **4.9% of completions were for certificates**; 377 certificates were awarded in 2020 (-27.4%)



- | Specialized: | Common: |
|---------------------------|--------------------------|
| • Marketing (5%) | • Customer Service (14%) |
| • Strategic Planning (5%) | • Management (10%) |
| • Event (4%) | • Sales (10%) |
| • Community Outreach (3%) | • Microsoft Office (9%) |
| • Sales Management (2%) | • Leadership (8%) |

* Profile analytics mine data from the 122,915 online resumes that list the region as the place of residence (63.7% of all jobs in the region).

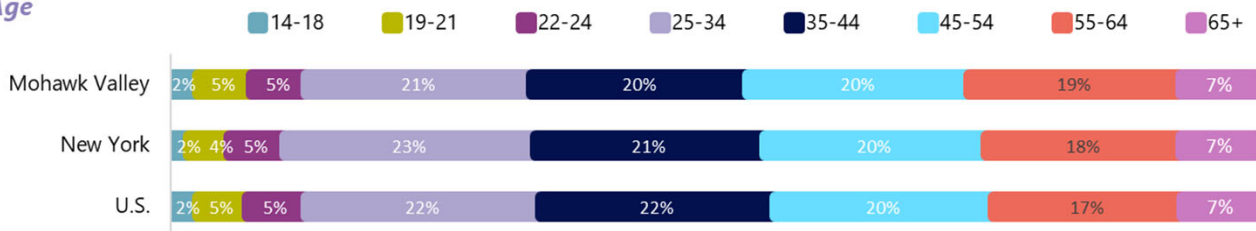


- **The region is a net exporter of workers** with 42,905 inbound commuters (8.4% from out of state) and 54,945 outbound commuters (4.8% from out of state)
- Top origins: Madison County, NY (13.2%), Onondaga County, NY (11.4%), Saratoga County, NY (7.9%)
- Top destinations: Albany County, NY (16.3%), Onondaga County, NY (15.8%), and Saratoga County, NY (8.9%)
- Mean commute time ranges from 19.9 minutes (Oneida County) to 30.7 minutes (Schoharie County); five of six counties have quicker commutes than the nation (26.9 min) and all six are quicker than the state average (33.5 min)

Labor Force Demographics

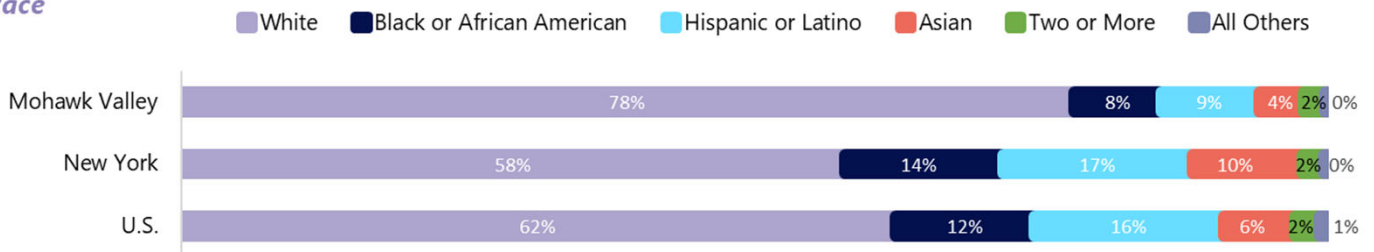
The graphs below show the demographic distribution of the Mohawk Valley Region’s workforce by age, race, and sex.

Age



Mohawk Valley’s workforce has a larger share of young workers compared to the state, and more older workers than the state and nation. Prime-aged workers (ages 25-54) only account for 61% of the workforce, compared to 64% for the state and 63% for the nation. Over the past five years, younger and middle-aged workers are decreasing as older workers increase, in line with state and national trends.

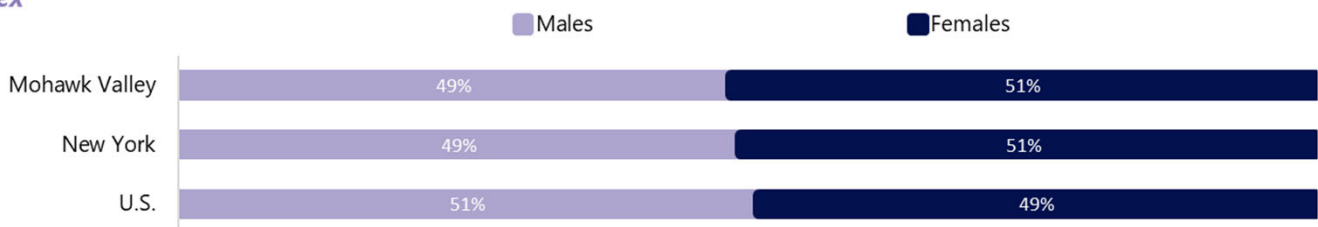
Race



"All Others" includes American Indian, Alaska Native, Native Hawaiian, or Other Pacific Islander

The racial composition of Mohawk Valley’s workforce is significantly less diverse than the state or the nation, with only 22% BIPOC workers compared to 42% for the state and 38% for the nation. However, the region’s workforce is diversifying at a slightly faster pace, with a 2.6% increase in BIPOC workers in the past five years compared to 1.8% for the state and 2.3% for the nation. The largest gains were in Hispanic or Latino workers (1.3% increase since 2016).

Sex



Mohawk Valley’s workforce aligns with the sex distribution of both the state and the nation. The sex distribution of workers has remained fairly consistent over the past five years for all three regions of analysis.

Underserved Populations

The graph below shows the underserved populations with a jobless rate that exceeds that of the region as a whole. Jobless workers, which includes both the unemployed and those who are not currently seeking employment, represent an opportunity to expand the workforce both in terms of additional workers and in terms of inclusivity and equity.

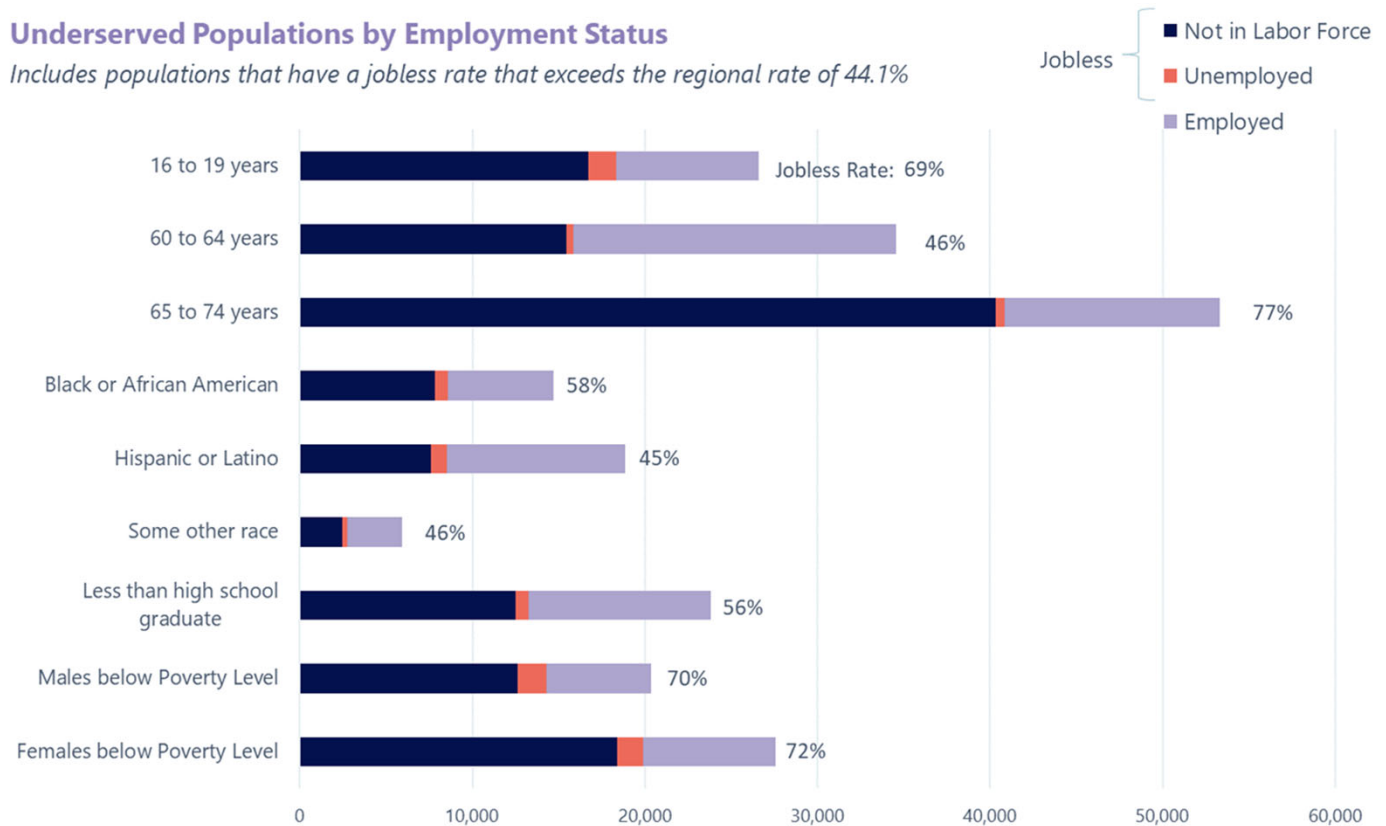
Altogether, **there are nine underserved populations who could potentially be activated within the workforce** given the right support and circumstances (a person could fall within multiple categories, e.g., aged 65–74 and some other race). Of these, 94% are not in the labor force and 6% are unemployed.

The underserved populations that have the highest jobless rates include older workers, males and females in poverty, and teens. **The underserved populations that would have the greatest impact in terms of expanding the workforce include older workers, teens, and females below the poverty line.**

Populations whose jobless rate was lower than the overall regional rate include all other age groups, all other educational attainment categories, individuals with disabilities, veterans, and formerly incarcerated individuals.

Underserved Populations by Employment Status

Includes populations that have a jobless rate that exceeds the regional rate of 44.1%



Source: American Community Survey, 5 Year Estimates, 2020; Jobless = Not in Labor Force + Unemployed

Mohawk Valley Regional Findings

The data, interviews, and research identified four themes that represent opportunities to close gaps in the workforce development pipeline in the Mohawk Valley. These are themes that address issues noted across the region and across all sectors of the economy.

Low workforce participation rate

The labor force participation rate of 56.8% has not yet recovered to the pre-pandemic rate of 57.5%. There are over 165,403 missing workers, presenting an opportunity to bring residents in (or back into) the workforce; 47% of these “missing workers” are over the age of 65.

Populations that offer the greatest impact in terms of expanding the workforce include older workers, teens, and females below the poverty line.

High out-migration and commuting rate

Over 12,000 employees are commuting out of the region. With lower wage levels (average income in the Mohawk Valley is \$65,000) than other areas of the state, attraction, retention, and activation of the labor force is more difficult.

Missing career readiness

The current education pipeline is not preparing graduates for life after high school and additional resources will be required to meet the current and future demand of employers.

Employer interviews and data suggests that there is a need for greater attention to basic skills required to get and keep a job.

Limited available wraparound services

Employers and employees are challenged by the inability to access services to make employment possible. Child and elder care, English as a second language, transportation, and other services are limiting the ability of residents to participate in the workforce. Finding flexible approaches that meet the needs of employees and employers will be critical.

Implementation Plan: Regional Strategies

The implementation strategy recommends a series of projects and initiatives to develop the pipeline of workers. These recommendations align with the needs and opportunities identified throughout the planning process as well as the stakeholder feedback.

#	Initiative	Description	Partners
1	Develop career readiness of population	Strategies to improve residents' ability to get and keep a job in the Mohawk Valley	Department of Education, K-12 Educators, BOCES, Parents, Employers
2	Reimagine the educational ecosystem	Strategies to strengthen the connection between the educators and industry will ensure students have what they need, including critical thinking and technical skills, to succeed	Higher Education Institutions, Department of Education, K-12 Educators, BOCES, Parents, Employers
3	Develop easier access to work	Strategies to address critical wrap around needs of child care and transportation	Office of Children and Family Services, Community Colleges, Employers, BOCES, Child Care Resource and Referral Agencies
4	Enhance Mohawk Valley's ability to attract and retain	Strategies to promote and enhance the high quality of life in the Mohawk Valley as it relates to work/life balance and attracting and retaining workforce	Mohawk Valley Society of Human Resource Management, Employers, Higher Education Institutions

What Businesses Are Saying:

"Most career counselors are not guiding graduates to careers where there are opportunities."

Develop Career Readiness of Populations

INITIATIVE 1

Businesses throughout the Mohawk Valley indicate a need to prepare students and individuals more fully to be contributing members at work. Career readiness is sometimes referred to as soft skills or employability skills.

STRATEGY 1.1

Build awareness throughout the school districts about critical skills

Tactic: Expand collaboration between school districts, BOCES programs, community colleges, and industry leaders to understand the best approach to filling skill gaps.

- Address the stigma associated with BOCES and highlight career-focused programming.

Tactic: Enhance opportunities for virtual classrooms, sharing resources between districts, and creating a standardized curriculum.

STRATEGY 1.2

Expand middle-skill training

Tactic: Continue to support organizations doing continuing professional development training throughout the region, For example, programs through the Workforce Development Boards, OtsegoNow, MVCC Education Outreach Center and BOCES Adult Education School, and others.

Tactic: Establish subsidies for training programs that make reskilling and upskilling available to middle-income individuals. Collaborate with workforce boards to enhance incumbent worker training programs. Look for alternative and flexible training programs to meet the needs of incumbent workers, including virtual reality, hybrid, and online.

For example, expand the Department of Labor Unemployed and Underemployed Worker training programs as well as ESD Pay for Success Grant Program to meet local and regional needs.

STRATEGY 1.3

Promote a wide variety of available micro-credentialing programs

Tactic: Support community colleges in expanding focused programs, particularly around areas of agribusiness, STEM, advanced manufacturing, and digital literacy. Work with local workforce boards to fund customized training programs that offer recognized credentials.

Many successful micro credentialing programs exist in the Mohawk Valley. Inventory capacity of these programs, expand where possible and continue to promote to students as alternatives to full degree programs.

Examples include:

- [Fulton-Montgomery Community College](#)
 - Accounting & Finance
- [Mohawk Valley Community College](#)
 - Remotely Piloted Aircraft Systems Data Analysis, Maintenance, and Operations
- [Herkimer College](#)
 - Supply Chain Management
- [SUNY Cobleskill](#)
 - Agribusiness Management & Finance
 - Meat Processing
 - Precision Agriculture Tech
 - Cybersecurity Fundamentals

Reimagine the Educational Ecosystem

INITIATIVE 2

The current education system is not preparing all students for success after graduation. Strengthening the connection between the educators and industry will ensure students have what they need to succeed, including critical thinking and technical skills.

STRATEGY 2.1

Build a career mindset throughout K-12 for students, teachers, counselors, mentors, and parents

Tactic: Promote regional career options with non-college pathways by working with local trade unions, BOCES, and local businesses.

- Invest in the expansion of the PTECH program, including additional space and teachers to allow them to grow their program. See more detail about PTECH in the Agribusiness section.
- Support existing programs through the Madison-Oneida BOCES PROPEL program, New Visions program, Links to Success, and various Career Technical Education programs. Replicate successful programs in all districts.

Tactic: Coordinate a summit where school districts, teachers, boards of education, NYS Department of Education, and others are invited to learn about various career pathways.

- For example, the collaboration between Indium Corporation, Assured Information Security, and ConMed to raise awareness among interns about regional career opportunities and reasons to stay.

Tactic: Invest in community centers that provide workforce development support, including:

- Mohawk Valley Latino Association Community Resource and Community Center
- Midtown Utica Community Center

STRATEGY 2.2

Establish a higher education consortium to focus on aligning education of the future with industry and workforce needs of the future

Tactic: Bring together a roundtable of higher education professionals interested in rethinking the role education plays in the region. Review the results of the State Education Department's Blue Ribbon Commission on Graduation Measures and implement them as appropriate.

Tactic: Consider issues associated with access to higher education for different segments of the population, such as cost, transportation, child care, and other barriers. Collaborate to find solutions to expand access.

Of Note

Oneida-Herkimer-Madison BOCES offers programs for students to gain awareness of career opportunities, including:

- **School and Business Alliance** provides career development and work-based learning experiences in wide variety of career sectors
- **Regional Program for Excellence** provides students opportunities to complete internships with respected professional mentors.

Develop Easier Access to Work

INITIATIVE 3

Limited access to child care, eldercare, and transportation makes it difficult for certain segments of the population to reliably show up for work. Increasing access to wrap around services is critical to increasing labor force participation.

STRATEGY 3.1

Continue work to expand access and affordability of child care

Tactic: Increase resources for Child Care Resource and Referral Agencies to address critical child care issues, including home-based and facility-based programs.

- Investigate potential to create a pool of available substitutes and adjustment to licensing requirements
- Establish office recognized credential program using apprenticeships

Tactic: Work with local colleges and BOCES to establish affordable and efficient programs.

- Ex) Articulation agreement between SUNY Cobleskill Early Childhood-Teacher Education Concentration with Utica University Psychology-Child Life.

Tactic: Inventory best practices such as stipends for employees, collaboration among multiple employers in a co-op facility, or investing to expand available slots.

- Consider adjustment to Empire State Development Excelsior Jobs Program Child Care Tax Credit to incentivize direct investments in off-site child care facilities for their employees.
- Make subsidies easier to access for parents and providers.

Tactic: Advocate for increased state CDBG funding for community-based child care facilities that serve underserved populations.

STRATEGY 3.2

Improve transportation access from home to work

Tactic: Assess current infrastructure and assets and identify opportunities for redeployment or improvement to meet employee and employer needs.

Tactic: Support innovative and flexible programs that address the transportation issues faced by employees and employers.

- Stipends for public transportation or Uber/cab in more urban areas.
- Ride-share programs in more rural areas.

Tactic: Continue work to identify pockets of potential workers, especially within immigrant populations, and expand opportunities for ride-sharing to rural parts of the region in coordination with employers.

- Expand work by The Center to help employees get their driver's licenses.
- Identify potential programs to provide vehicles.

STRATEGY 3.3

Support efforts of The Center's employment department

Tactic: Expand The Center's capacity to provide needed employment services, including English as a Second Language courses and employment connections

Enhance Mohawk Valley's Ability to Retain Workforce

INITIATIVE 4

The Mohawk Valley offers high quality of life for residents. Working collaboratively with employers to highlight healthy work environments, support for work/life balance, and quality of life will have a positive impact on workforce attraction and retention efforts.

STRATEGY 4.1

Expand the work of the Mohawk Valley Society Human Resources Management (MVSHRM) and other regional human resource consortiums to meet today's needs

Tactic: Facilitate regular conversations between human resource (HR) professionals to discuss issues, bring best practices back to their individual companies, and act in the best interest of workers and the workforce in the Mohawk Valley.

Tactic: Promote the best practices of companies in the region to provide improved benefits packages and modern work environments and to understand the role that management and culture can play in workforce retention. Include discussions around how to retain employees, the importance of company culture, employer brand, and employee benefits.

STRATEGY 4.2

Assess the current work environment

Tactic: Provide funding for employers to conduct regular self-assessments and employee surveys to better understand how to meet the needs of the workers in order to retain them. Provide guidance on how to audit their employee engagement and work environments.

STRATEGY 4.3

Expand efforts to decrease out-commuting and relocation

Tactic: Expand [Regional Innovation Council](#) work to build an education-to-workforce pipeline to incentivize students (high school and college graduates) to stay in the region.

Tactic: Continue investment in housing options in the region.

Tactic: Capitalize on the expansive community college and university system by connecting students with employers early in their educational career to establish a direct education-to-employment track.

- Consider different benefits to incentivize students to stay in the area, such as tuition reimbursement, assistance with housing, or ongoing career mentorship.

Tactic: Continue to build on the efforts to promote the Mohawk Valley as a great place to live, such as the WhatsUpstate initiative. Market to parents who still live in Mohawk Valley and could help convince their children to return.

- Help with moving costs and other expenses associated with moving to Mohawk Valley, including job or training opportunities for accompanying spouses/partners.
- Consider a regionwide initiative to pilot a four-day work week and other efforts to be a place that celebrates work-life balance and is a leader in employee-led flexibility.



2

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Mohawk Valley **Agribusiness Cluster** **Research and Strategies**

Background Information

Purpose

This workforce strategy for Agribusiness builds off the Regional Workforce Inventory completed by the Regional Council.

What follows are solution-driven approaches for workforce development and a roadmap for how to address the needs of the Agribusiness cluster in the Mohawk Valley.

Sector Definition

The Agribusiness sector includes businesses serving the agricultural production and processing industry, including food, beverage, chemical, and agricultural machinery manufacturing. It also includes wholesale trade, transportation and warehousing, and professional, scientific, and technical services related to agriculture.

Major Companies and Partners

Major employers and partner organizations in this sector include:

- Beechnut
- Matt Brewing Company
- Fage
- Chobani
- Euphrates Cheese
- Cornell Cooperative Extension of Oneida County
- SUNY Cobleskill
- Hartwick Craft Center for Food & Beverage
- Hartwick Grain Innovation Center
- Feldmeir Equipment
- HP Hood
- Sovena USA

Why Agribusiness?

The Agribusiness sector is a critical element of the Mohawk Valley's economy.

Significant Employment

7,201

jobs, 4% of the region's employment

Notable Businesses

429

establishments, share of 4%

Agribusiness as a Priority

From the 2022 REDC Annual Report:

Agribusiness is a priority as the Mohawk Valley continues to cultivate food and beverage processing enterprises that leverage our 466,000 acres of farmland to serve burgeoning demand for sustainably produced goods.

The Mohawk Valley Region stands out for its exceptional agricultural training and entrepreneurship resources, including the incubation and acceleration resources, commercial kitchens, and mobile agricultural engineering and food processing training available through SUNY Cobleskill's Institute for Rural Vitality.

What We Heard

The team conducted eight interviews that addressed the Agribusiness cluster, including private employers, educators, and workforce development entities. Stakeholders described significant gaps within the Agribusiness workforce due to a lack of training opportunities/career pathways, rising labor costs/competition, evolving employee expectations, and challenging working environments.

Challenges

- The food processing work environment is challenging, or is at least perceived to be so (e.g., heavy lifting and working in refrigerated environments)
- Rising labor costs and a highly competitive market
- The food supply chain is logistically complex; the industry is experiencing significant delays and cost increases in supplies and equipment

Needs

- Improved marketing of industry opportunities among the available workforce
- Skills training, especially meat processing
- Policy support for allowing the immigrant workforce to work
- Strong benefits packages that value people (e.g., profit sharing, stock options, wraparound services, etc.)

Of Note:

SUNY is exploring the development of a cross-institutional partnership to leverage the strengths of its component institutions to cultivate an agribusiness career pathway to opportunities within the region.

What We Discovered

The vast majority of the cluster's jobs are in low-skill occupations

The cluster has 105 occupations with at least 10 jobs

Occupational Mix

- 20% Production occupations
- 14% Transportation and Material Moving occupations
- 14% Management occupations
- 52% Other occupations

Low-Skill Occupations

- 77% of the jobs in this cluster
- Hourly wages range from \$13.40-\$37.78
- 65% of jobs have an above-average risk of automation

Middle-Skill Occupations

- 10% of the jobs in this cluster
- Hourly wages range from \$19.64-\$29.90
- 70% of jobs have an above-average risk of automation

High-Skill Occupations

- 13% of the jobs in this cluster
- Hourly wages range from \$21.70-\$72.20
- 0% of jobs have an above-average risk of automation

Significant gaps across all occupations, particularly among low-skill jobs

Projected workforce gap (2022-2032): **(9,314)**

$$\left. \begin{array}{l} \text{Openings} - \text{Change in Labor Force} = \text{Workforce Gap} \\ 8,859 - (456) = (9,314) \end{array} \right\}$$

Gaps projected across all 105 occupations in the cluster; gaps are particularly concentrated for Farmers, Ranchers, and Other Agricultural Managers (9.6% of the gap) and Farmworkers and Laborers, Crop, Nursery, and Greenhouse (9%)

Of the total projected workforce gap:

- 82% of jobs are Low Skill
- 8% are Middle Skill
- 10% are High Skill

The nine Top Gap Occupations are plotted on the next page. None of the Top Gap Occupations are considered high skill.

Large gaps for Common Skills

There are 65 skills categories where employer demand exceeds worker supply, based on online job postings and worker profiles. Gaps for Common Skills are significantly larger than for Specialized Skills and Qualifications.

Top Skills Gaps

- *Specialized Skills:* Merchandising, Selling Techniques, Warehousing, Auditing, Invoicing
- *Qualifications:* Commercial Driver's License (CDL), Security Clearance, OSHA, Master of Business Administration, Scrum (Software Development)
- *Common Skills:* Communications, Customer Service, Sales, Management, Operations

Heavy and Tractor-Trailer Truck Drivers is the only Top Gap Occupation that requires beyond a high school education for entry

Types of Programs:

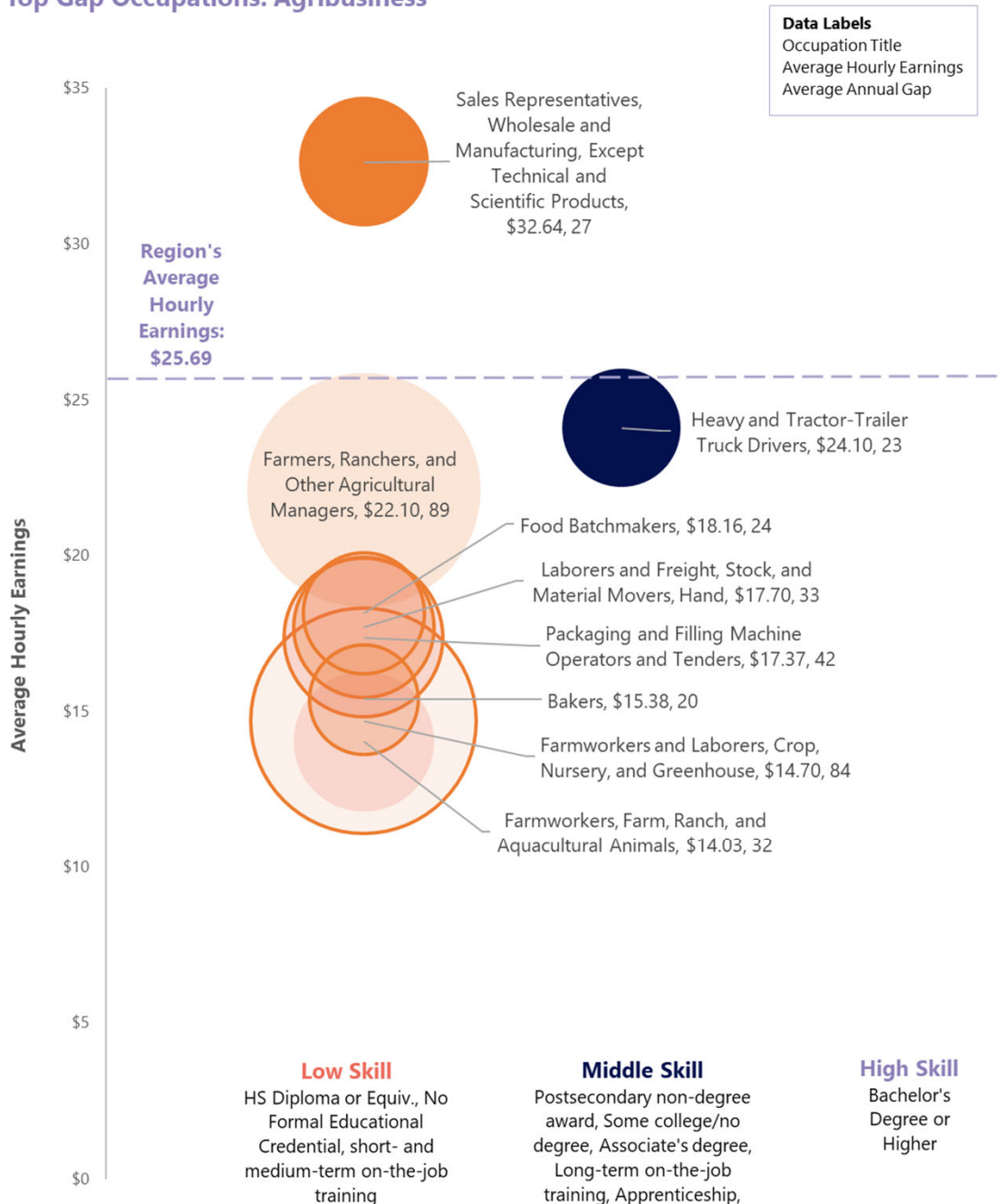
- *Higher Education:* 41 active training programs related to — but not required for — the Top Gap Occupations (e.g., managers and sales representatives) producing an average of 982 graduates who are likely to remain in the region (however, this cluster will be competing with all other industries for these workers)
- *Apprenticeships:* none
- *Certifications:* One for CDL (unknown completions)
- *Other Programs:* One for CDL (unknown completions)

More information is needed regarding employer need and capacity for training programs for low- and middle-skill occupations.

What We Discovered (cont.)

The occupations with the largest gaps are plotted below by **Earnings** (y axis), **Skill Level** (x axis, coded by color), and **Projected Average Annual Workforce Gap** (bubble size), with average hourly earnings and the gap included in the data labels. These nine occupations account for 40.2% of the total gaps anticipated in this cluster. None of the Top Gap Occupations are considered High Skill. See the appendix for more detail on the Top Gap Occupations.

Top Gap Occupations: Agribusiness



Agribusiness Findings

The following two themes are specific to the critical workforce development issues facing Agribusiness. The Agribusiness cluster in the Mohawk Valley is challenged with limited workforce and a mismatch of skills needed to lead the industry into the future.

Need for greater farm management capability

Additional awareness of available programs and capacity is needed to attract and retain workers with management skills. Specifically, the Farmers, Ranchers, and Other Agricultural Managers occupation is projecting a gap of nearly 900 workers over the next 10 years.

Formal and informal training will support the development of current and future leaders within this industry.

Rising labor costs

The Agribusiness cluster has found it difficult to attract workers due to real and perceived challenging work environments, low pay, and the appearance of limited career growth opportunities.

Evolving employee expectations are making Agribusiness a less appealing sector in the labor force.

What Businesses Are Saying:

"Immigration, naturalization and citizenship also has to be revisited. These people will keep the food supply chain going. The traditional American worker will not work in the food industry ... temporary visas for labor by non-citizens (called H2A) is only allowed for farms. Typically, they'll work 8-10 months for multiple years, and that money is leaving the country. In the ag and food processing arena, we should welcome them here and remove barriers."

Implementation Plan: Agribusiness Strategies

The Agribusiness Cluster implementation strategy recommends a series of projects and initiatives to develop the pipeline of workers. These recommendations align with the needs and opportunities identified throughout the planning process as well as the stakeholder feedback.

#	Initiative	Description	Partners
5	Improve awareness of Agribusiness career	Strategies to increase awareness of careers within the Agribusiness cluster to expand the potential applicant pool	Department of Education, K-12 Educators, BOCES, Parents, Employers, National Associations
6	Expand Agribusiness career training	Strategies to increase access and availability of Agribusiness cluster-related training opportunities to ensure the workforce has the skills needed to succeed	Higher Education Institutions, Department of Education, K-12 Educators, BOCES, Parents, Employers, USDA

What Businesses Are Saying:

"It is important to position strong benefit packages and make people part of the family."

"In the last 30 years, the unionization of the food industry has become non-existent ... now, the progressive owners like Chobani give profit sharing and stock options to employees. You have to make the employee feel welcome and part of the family. The harder they work, the better you'll do."

Improve Awareness of Agribusiness Careers

INITIATIVE 5

Increasing awareness of the wide variety of employment opportunities available in the Agribusiness cluster will help to motivate younger people towards the sector to help create a larger pool of qualified candidates for producers, farms, and agritourism establishments.

STRATEGY 5.1

Build awareness of local Agribusiness cluster career opportunities

Tactic: Host events around the region for students and parents to highlight and celebrate individuals who have had success in Agribusiness in the Mohawk Valley, including both small and large producers, farms, agritourism, and other aspects of the cluster.

Tactic: Support BOCES and schools in their efforts to expand opportunities for field trips, mentorship, internship, and apprenticeship programs to raise awareness. Bring students to different facilities around the region, host community events at food processing facilities, and coordinate regional celebrations that highlight regional Agribusiness companies.

STRATEGY 5.2

Increase female participation in the industry

Tactic: Assess current flexible work-hour policies and benefits, including funds for wrap around services.

Tactic: Address and eliminate any sexual harassment or hiring discrimination.

STRATEGY 5.3

Attract teens and young people to Agribusiness

Tactic: Use social media (particularly TikTok) to engage with young residents around summer opportunities to work in the Agribusiness cluster.

Tactic: Use language and images that showcase the wide variety of occupations, jobs, careers, and working environments within the Agribusiness sector, from farms to manufacturing to agritourism.

Tactic: Participate in high school job fairs and encourage fairs to be held on-site at unique producers or manufacturing facilities.

Expand Agribusiness Career Training

INITIATIVE 6

The Mohawk Valley has many unique and successful training programs to meet the needs of the Agribusiness cluster. Expanding these programs, replicating them, and promoting them to the next generation will be critical to enhancing the skills of workers to meet the needs of the industry.

STRATEGY 6.1

Continue work to build the Agribusiness Research and Workforce Innovation Hub at SUNY Cobleskill

Tactic: Invest in efforts to develop and deliver agricultural workforce training programs for front-line greenhouse production workers, high-tech food system programmers, and on-farm energy managers.

Tactic: Continue to expand opportunities to collaborate, adjust training programs, and meet the shifting needs of the Agribusiness cluster.

STRATEGY 6.2

Develop and expand apprenticeship programs for Top Gap Occupations

Tactic: Build apprenticeship programs for Laborers and Freight, Stock, and Materials Movers; Food Batchmakers; and Bakers as top gap occupations.

Tactic: Expand training opportunities specific to meat and dairy processing.

STRATEGY 6.3

Continue to build programming to improve overall skills in the region to address the changing demands of Agribusiness

Tactic: Regularly assess and build on existing programs like Herkimer-Fulton-Montgomery BOCES, The Institute for Rural Vitality at SUNY Cobleskill, and the many other offerings at SUNY Cobleskill. Look for opportunities to replicate, expand, and enhance programs throughout the region to reach more students and partners.

Tactic: Build on dual credit opportunities for high school students who may be interested in the Agribusiness cluster to gain credits towards regional school programs like the BOCES PTECH program.

Tactic: Assess the feasibility of expanding the capacity of programming at SUNY Cobleskill to address critical workforce shortages of key occupations.

Tactic: Collaborate with the US Department of Agriculture to develop workforce development programs to address the needs of the changing industry.

Tactic: Invest in program expansions that are tied to Top Gap Occupations, emerging needs, and future workforce requirements.

Expand Agribusiness Career Training (cont.)

STRATEGY 6.4

Build management capacity to serve the Agribusiness cluster throughout the Mohawk Valley

Tactic: Work with industry leaders and employers to identify which curriculum and skills are most needed for manager occupations within the Agribusiness cluster and develop and deliver training, including:

- Technical business management
- Marketing
- Human resources
- Occupational Safety and Health Administration credentials

Tactic: Continue work to build on existing cross-institutional partnerships within SUNY to leverage the strength of component institutions. For example, the articulation agreements between SUNY Cobleskill graduate programs that allow students to achieve a degree in Agricultural Business.

- Establish assistance or incentives to encourage students pursuing those degrees outside of the region to return.

Tactic: Expand and invest in internships that connect regional business administration students with Agribusiness opportunities.

Tactic: Support growers and processors through technical assistance to accelerate the Shift to Ecommerce, especially in the farm-to-doorstep infrastructure required to complete transactions.

Tactic: Support Agribusiness cluster businesses in reviewing their operations to identify areas for automation and corresponding upskilling of employees.

Pathways in Technology Early College High School (PTECH) provides students with a pathway to work towards a two-year degree from Fulton Montgomery Community College or SUNY Cobleskill at no additional cost.

Over the last eight years of operation, they have been able to expand their program to serve 60 students per year throughout the region to help address career readiness and establish clear career pathways. The program assists students who otherwise might not have been exposed to these opportunities for advancement.

Participating degree programs in

- Agricultural Business
- Agricultural Science
- Agricultural Engineering Technology: Power Machinery
- Animal Industry
- Biological Technology
- Environmental Studies
- Fisheries and Wildlife Technologies
- Sustainable Crop Production
- Culinary Arts



3

Mohawk Valley Finance and Insurance Cluster Research and Strategies

Background Information

Purpose

The Finance and Insurance cluster has been identified as a priority for the Mohawk Valley due to its significant presence in the region, high pay and career opportunities, and the sector's growth.

More than two-thirds (70%) of the occupations in the Cluster pay above-average wages, and seven of the 11 most in-demand occupations provide above-average pay.

What follows are solution-driven approaches for workforce development and a roadmap for how to address the needs of Finance and Insurance businesses in the Mohawk Valley.

Sector Definition

The Finance and Insurance sector includes occupations and establishments engaged in financial transactions, including banking, securities, financial vehicles, and insurance carriers.

Major Companies

Major employers in this sector include:

- New York Central Mutual Insurance Co.
- Gilroy, Kernan & Gilroy Insurance
- Utica National Insurance
- MetLife
- BNY Mellon
- The Hartford
- Bank of America
- Defense Finance Accounting Services

Why Finance and Insurance?

The Finance and Insurance sector is a growing element of the Mohawk Valley's economy.

Significant Employment

8,973

jobs, 5% of the region's employment

Notable Businesses

471

establishments, share of 4%

High Growth

787

jobs added (10%) 2017–2021

Specialized

2.63

average LQ, highest subsector LQ of 4.54

Department of Labor Data

The Finance and Insurance sector added over 500 jobs in 2019 in the Mohawk Valley and has regained any jobs lost during the pandemic, recovering 267% of total jobs lost between February and April 2020.

What We Heard

A key challenge described in by employers in the Finance and Insurance cluster was the competition inherent in evolving employee expectations and the loss of qualified candidates to larger markets, especially given that this sector lends itself to remote work opportunities.

To combat this, the industry is working to cultivate relationships with the student/emerging workforce early on, connecting with students while they are in high school and providing continuity through college internships and training programs in hopes of retaining them.

Employers expressed a need to improve perceptions and awareness of industry opportunities among college students, especially around career growth potential and removing the stigma associated with outdated perceptions of the insurance industry.

Challenges

- Location in upstate New York; difficulty attracting young/emerging workforce to a remote area
- Perceived lack of quality-of-life amenities in the area compared to other areas talent may be considering
- Lack of top talent seeking work in this area since the pandemic; remote-enabled industry results in loss of workforce to other areas
- Companies who want to maintain on-site work are challenged to attract top talent who want remote work
- Lack of interest in the industry among emerging/student workforce; Perception that this industry is "boring."
- Current workforce is aging and retiring, resulting in skills gap and loss of institutional knowledge
- Lack of skilled workers
- Companies are looking to remote work to get the employees they need

Needs

- Underwriters/actuarial skills
- Claims professionals
- Risk management specialists
- Market the strengths of the industry to potential applicants, especially new graduates
- Pipeline for ready entry-level positions
- More risk management education programs to create a reliable pipeline of employees. Expand the number of programs available for potential candidates to increase the pipeline to early career employment opportunities (compensate for an aging workforce)

Of Note:

- Stakeholders noted that it's difficult to attract people from outside the region into Upstate New York, however, it's easier to keep people in the region once they're employed.
- The Mohawk Valley is an attractive location for back-office companies looking to relocate from higher-cost regions.

What We Discovered

Middle-skill jobs make up a relatively small portion of this cluster

The cluster has 81 occupations with at least 10 jobs

Occupational Mix

- 35% Office and Administrative Support occupations
- 30% Business and Financial Operations occupations
- 13% Sales and Related occupations
- 22% Other occupations

Low-Skill Occupations

- 44% of the jobs in this cluster
- Wages range from \$14.30-\$37.78
- 32% of jobs have an above-average risk of automation

Middle-Skill Occupations

- 11% of the jobs in this cluster
- Wages range from \$20.98-\$37.58
- 27% of jobs have an above-average risk of automation

High-Skill Occupations

- 45% of the jobs in this cluster
- Wages range from \$28.49-\$85.39
- 0% of jobs have an above-average risk of automation

Significant gaps across all occupations, particularly among high- and low- skill jobs

Projected workforce gap (2022-2032): **(9,510)**

$$\text{Openings} - \text{Change in Labor Force} = \text{Workforce Gap}$$
$$8,925 - (585) = (9,510)$$

Gaps projected across all 81 occupations in the cluster; gaps are particularly concentrated for Customer Service Representatives (9.8% of the total gap) and Insurance Sales Agents (8%)

Of the total projected workforce gap:

- 47% are in Low Skill occupations
- 9% are Middle Skill
- 44% are High Skill

The 11 Top Gap Occupations are plotted on the next page.

Large gaps for Common Skills

There are 98 skills categories where employer demand exceeds worker supply, based on online job postings and worker profiles. The largest skills gaps were for Common Skills.

Top Skills Gaps:

- *Specialized Skills:* Merchandising, Accounting, Auditing, Finance, Marketing
- *Qualifications:* Security Clearance, Master of Business Administration, Project Management Professional Certification, Certified Public Accountant, Certified Information Systems Security Professional
- *Common Skills:* Communications, Customer Service, Management, Sales, Leadership

Not enough graduates are coming out of the training pipeline for Securities and Insurance Underwriters

Five of the 11 Top Gap Occupations require beyond a high school diploma (or equivalent) for entry.

Types of Programs:

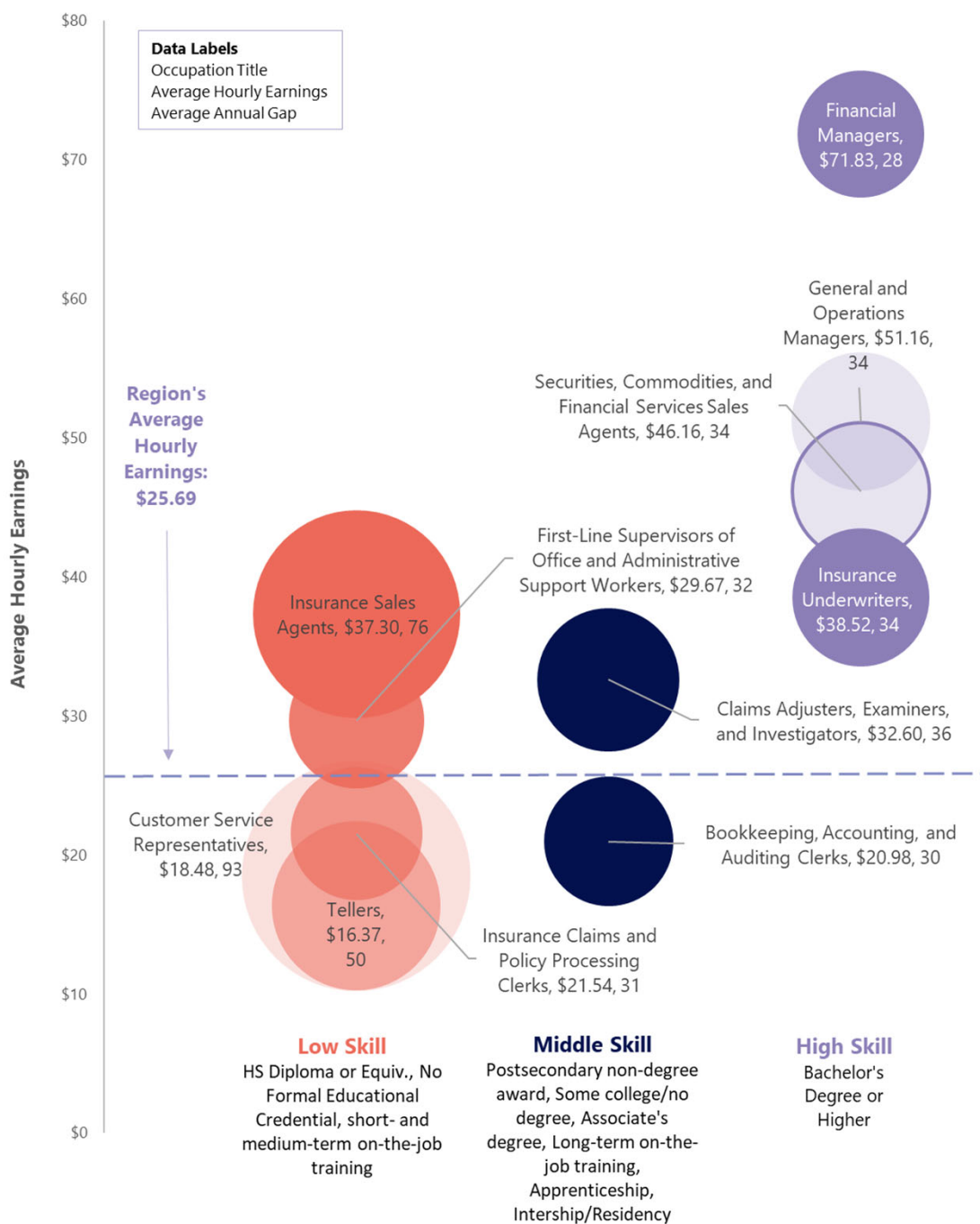
- *Higher Education:* 184 active training programs related to the Top Gap Occupations producing an average of 3,634 graduates who are likely to remain in the region (however, this cluster will be competing with all other industries for these workers)
- *Apprenticeships:* none
- *Certifications:* none
- *Other Programs:* none

More information is needed regarding employer need and capacity for training programs for low- and middle-skill occupations.

What We Discovered (cont.)

The occupations with the largest gaps are plotted below by **Earnings** (y axis), **Skill Level** (x axis, coded by color), and **Projected Average Annual Workforce Gap** (bubble size), with average hourly earnings and the gap included in the data labels. These 11 occupations account for 50.2% of the total gaps anticipated in this cluster. See the appendix for more details on the Top Gap Occupations.

Top Gap Occupations: Finance & Insurance



Finance & Insurance Findings

Specific to the Finance and Insurance cluster, there are two critical issues described below.

The Mohawk Valley is lacking employees to fill middle-skill occupations as well as some more advanced-skill occupations. Remote work is also a challenge and an opportunity for the region, as Mohawk Valley employers can access remote workers to fill their jobs, at the same time, Mohawk Valley residents are able to accept jobs based elsewhere.

Middle-skill workers are in great demand

Career-ready skills and middle-skill training are needed to fill the workforce gaps, particularly in the Customer Service Representative (gap of 929), Sales Agent (gap of 760), and Teller (gap of 504) occupations.

Targeted attraction and retention for key occupations is needed

Certain occupations within the sector are appropriate for targeted attraction and retention strategies, including those with a higher income potential such as Managers, Underwriters, and those with Accounting degrees.

Those with Masters of Business Administration and Certified Public Accountants are in high demand.

What Businesses Are Saying:

"The biggest challenge is getting outbid by other companies, especially now that more remote work is available both in and outside of the region. Is currently a workers' market."

Implementation Plan: Finance & Insurance Strategies

The Finance and Insurance cluster implementation strategy recommends a series of projects and initiatives to develop the pipeline of workers. These recommendations align with the needs and opportunities identified throughout the planning process as well as the stakeholder feedback.

#	Initiative	Description	Partners
7	Expand awareness of Finance and Insurance careers	Strategies to increase awareness of careers within the Finance and Insurance cluster to expand the potential applicant pool	Department of Education, K-12 Educators, BOCES, Parents, Employers, National Associations
8	Increase participation by diverse populations	Strategies to increase participation in the Finance and Insurance cluster by more diverse sectors of the workforce	Higher Education Institutions, Department of Education, K-12 Educators, BOCES, Parents, Employers

Expand Awareness of Finance & Insurance Careers

STRATEGY 7

Increasing awareness by younger residents about the opportunities for growth within the Finance and Insurance cluster will be critical to aligning education choices with a career pathway.

ACTION 7.1

Evaluate current training programs and expand and promote them as appropriate

Tactic: Work with training providers to assess the capacity of current programs and identify opportunities for expansion.

Tactic: Work with local workforce development boards to fund customized training programs offering recognized credentials.

Tactic: Offer local employers the opportunity to connect directly with students at all phases of schooling, but particularly at high school and community college levels to identify potential employees.

Tactic: Encourage internships and other earn-and-learn options for students in higher education within the Mohawk Valley.

ACTION 7.2

Work with local companies to understand the occupations that have remote potential

Tactic: Provide training and support for companies implementing a remote workforce for certain occupations, including best policies and practices.

Tactic: Coordinate with employers on the best approach to find and retain remote workers to serve their workforce.

ACTION 7.3

Address training for middle-skill employees and residents

Tactic: Create subsidies for training programs that make reskilling, upskilling, and professional development possible for middle-income individuals.

What Businesses Are Saying:

"With high levels of compensation, strong benefits, reasonable work hours, and strong DEI programs, culturally we have the qualities that should be appealing to graduates. But the perception is that the job is boring so we need to do more to entice them into the industry."

Increase Participation by Diverse Populations

STRATEGY 8

Expanding the representation of diverse populations in the Finance and Insurance cluster will increase the pool of qualified applicants and improve the overall ability of the cluster to grow and meet the needs of the region.

ACTION 8.1

Support expanded representation of minorities in Finance and Insurance careers

Tactic: Increase representation of minority populations in schools, celebrations, and career-related events.

Tactic: Assist with DEI initiatives and other programs to help companies expand their workforce base.

ACTION 8.2

Promote and support the expansion of current micro-credentialing and soft-skill training programs at community colleges to provide targeted training to underserved populations

Tactic: Identify opportunities to subsidize training to increase participation by underserved populations.

Tactic: Expand access to flexible programs that allow for focused areas of studies, specifically around areas unique to Finance and Insurance, such as skills associated with Tellers and Underwriters.

ACTION 8.3

Coordinate with other Upstate New York marketing efforts to target workers who may be looking for the Mohawk Valley lifestyle and who have the credentials needed

Tactic: Conduct a data driven geographic assessment to target individuals with advanced degrees that are in high need occupations for Finance and Insurance, such as MBA and CPA to serve the Insurance Underwriters (34 annual gap) and Financial Managers occupations (28 annual gap).

Tactic: Help with moving costs and other expenses associated with either moving to Mohawk Valley or working remotely.

Tactic: Work with other regional employers to create a "relocation network" to assist accompanying partners with finding job opportunities.

What Businesses Are Saying:

"Unemployment is low. In this scenario, we look wherever we can get [employees]. But often there is direct competition for employees within the industry."



4

Mohawk Valley
**Tech-Intensive Advanced
Manufacturing Research and
Strategies**



Background Information

Purpose

This workforce strategy for the Tech-Intensive Advanced Manufacturing sector builds off the Regional Workforce Inventory completed by the Regional Council.

What follows are solution-driven approaches for workforce development and a roadmap for how to address the needs of Tech-Intensive Advanced Manufacturing businesses in the Mohawk Valley.

Sector Definition

The Tech-Intensive Advanced Manufacturing sector includes businesses that produce high-value-add products, which includes significant input from professional, scientific, and technical services. This sector combines the region's previously identified Homeland and Cybersecurity sector and the Tech and Electronics sector due to their significant overlap in staffing patterns.

Major Companies and Partners

- Wolfspeed
- Air Force Research Laboratory
- Ioxus
- Danfoss
- Assured Information Security, Inc.
- HMI
- Rockwell Collins
- Riverhawk
- BAE
- NYSTEC
- M.A. Polce
- Booz Allen Hamilton
- Bartell Machinery
- Fiber Instrument Sales
- PAR
- Masonic Medical Research Laboratories
- Indium Corporation
- Kristech
- Metal Solutions
- Special Metals
- BOCES Programs
- PTECH
- Innovare Center for Advancement

Why Tech-Intensive Advanced Manufacturing?

The Tech-Intensive Advanced Manufacturing cluster is a critical element of the Mohawk Valley's economy.

Significant Employment

5,800

jobs, 3% of the region's employment

Notable Businesses

303

establishments, share of 2.8%

Specialized

3.33

average LQ, highest subsector LQ of 22.9

From REDC 2022 Annual Report:

The MVREDC has prioritized STEM-intensive industries and advanced manufacturing for their significant economic multiplier effect, capitalizing on the region's substantial high-tech innovation infrastructure that underpins advancements in semiconductors and advanced electronics (the Marcy Nanocenter/SUNY Polytechnic Institute) and cybersecurity and unmanned systems (Griffiss Institute, the Air Force Research Laboratory's Information Directorate, Innovare Advancement Center, the FAA-designated New York (UAS Test Site).

Statewide Opportunity:

Recent announcements by semi-conductor manufacturing companies planning new and expanded locations throughout New York State will create even greater demand for these skills. The Mohawk Valley is well positioned to attract and train for this industry sector.

What We Heard

The team conducted 14 interviews that addressed the Tech-Intensive Advanced Manufacturing cluster, including private employers, educators, and workforce development entities. Across the board, interviewees noted the importance of cultivating career pathways and development from early on, beginning with K-12 schools, to promote awareness and provide authentic job training opportunities while students attend school. Employers are collaborating with workforce development organizations and higher education institutions to formalize and expand apprenticeship/fellowship programs that serve as a key pipeline for qualified new hires.

Limited mentorship and instructor capacity currently poses a barrier to expanding these types of programs. According to interviewees, outreach to K-12 and higher education also needs to be paired with the provision of wraparound support services including transportation, child care, and food.

Challenges

- Lack of economic opportunities for trailing spouses and family
- Difficult to find candidates with the right credentials and technical skills (e.g., math, physics, cyber security, electrical, mechanical, and chemistry)
- Lack of awareness about the industry and the career pathways available
- Limited ratio of mentors to apprentices; and limited instructor capacity
- Time commitment needed to train students

Needs

- Electrical, mechanical, and chemical degrees
- People with data analysis skills
- Pipeline to replace retiring workers
- Increased awareness of the industry/career pathways among secondary education institutions
- Candidates with soft skills, basic time management skills, and willingness to work
- Upskilling and re-skilling for spouses
- Child care
- Transportation

What We Heard (cont.)

Of Note

- Employers report successes with the “earn as you learn” NYS Registered Apprenticeship Program as a means of advancing new hires to supervisory, middle management, and leadership positions. However, the **limited number of mentors is a barrier to expanding the success of this program.**
- Interviewees from the advanced manufacturing sector highlighted **the immigrant population as a critical backbone of the workforce.** As one stakeholder put it, “the manufacturing floor is 70% from the immigrant population.” Multiple stakeholders noted the importance of support services for this population, applauding the work of the Utica Refugee Center.
- **Industry partnerships** with Mohawk Valley Community College, the SUNY System, Syracuse University, and Cornell University **are a critical foundation** for training and recruitment. Examples include MVCC expanding its Mechatronics program and starting to offer tuition-free certificate courses in response to the needs of Wolfspeed, Indium, Semikron, Danfoss, and others.
- The **educational sector is responding to the introduction of key anchor industries** by formalizing institutional/industry programs that lead to guaranteed job placements for students, with a critical focus on underrepresented and marginalized populations (e.g., Wolfspeed Scholarship Program).
- While liberal arts institutions noted challenges in keeping students within the Mohawk Valley in the face of attractive opportunities in larger markets (e.g., NYC and Boston), **technical education programs noted that a high percentage of students remain local** to tap into the wealth of opportunities within the region.

What we Discovered

Middle-skill jobs make up a relatively small portion of this cluster

The cluster has 108 occupations with at least 10 jobs. The cybersecurity and the tech and electronics sectors are well represented within the staffing pattern of the combined cluster, with 14 of the top 15 occupations overlapping.

Occupational Mix

- 27% Production occupations
- 17% Computer and Mathematical occupations
- 12% Architecture and Engineering occupations
- 44% Other occupations

Low-Skill Occupations

- 42% of the jobs in this cluster
- Wages range from \$15.64-\$37.78
- 71% of jobs have an above-average risk of automation

Middle-Skill Occupations

- 15% of the jobs in this cluster
- Wages range from \$20.98-\$33.96
- 61% of jobs have an above-average risk of automation

High-Skill Occupations

- 43% of the jobs in this cluster
- Wages range from \$21.70-\$85.39
- 0% of jobs have an above-average risk of automation

Shortage of skills across all categories, but particularly in Communications

There are 66 skills categories where employer demand exceeds worker supply, based on online job postings and worker profiles.

Top Skills Gaps

- *Specialized Skills:* Merchandising, Auditing, Finance, Selling Techniques, SQL (programming language)
- *Qualifications:* Security Clearance, Master of Business Administration, Scrum (software development), OSHA, CompTIA Security+
- *Common Skills:* Communications, Operations, Problem Solving, Management, Planning

Gaps across all occupations, particularly among high- and low-skill jobs

Projected workforce gap (2022-2032): **(6,503)**

$$\left\{ \begin{array}{l} \text{Openings} - \text{Change in Labor Force} = \text{Workforce Gap} \\ 6,115 - (387) = (6,503) \end{array} \right\}$$

Gaps projected across all 108 occupations in the cluster

Gaps are particularly concentrated for Electrical, Electronic, and Electromechanical Assemblers (9.2% of the gap), Miscellaneous Assemblers and Fabricators (6.6%), and Software Developers (5.8%)

Of the total projected workforce gap:

- 46% are Low Skill
- 14% are Middle Skill
- 40% are High Skill

The Nine Top Gap Occupations are plotted on the next page.

Eight of the nine Top Gap Occupations are among the top occupations in the staffing pattern for both the Cybersecurity and Tech & Electronics sectors.

There are robust training programs in place for high-skill occupations

Three of the nine Top Gap Occupations require beyond a high school diploma (or equivalent) for entry.

Types of Programs

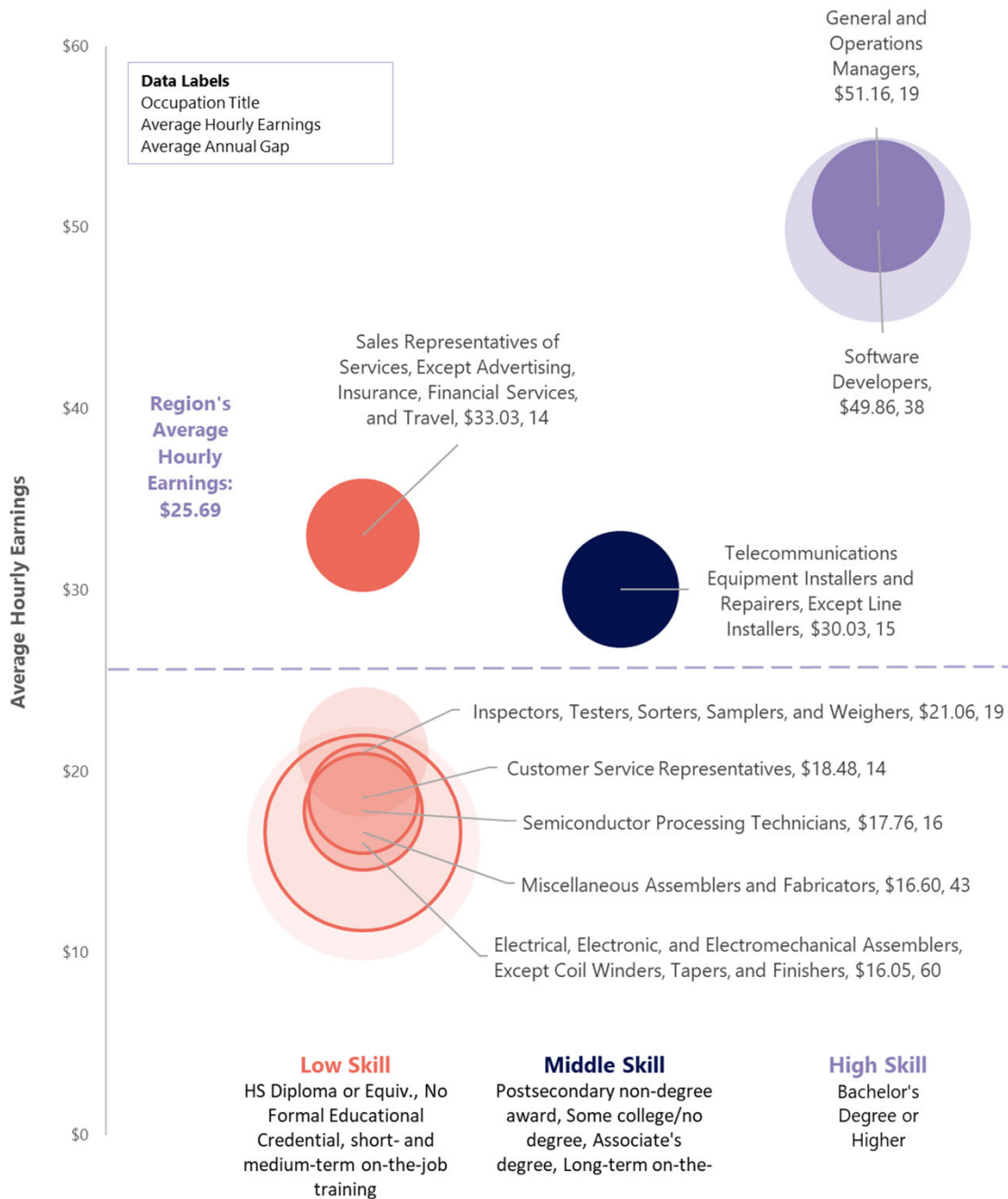
- *Higher Education:* 123 active training programs related to the Top Gap Occupations producing an average of 2,196 graduates who are likely to remain in the region (however, this cluster will be competing with all other industries for these workers)
- *Apprenticeships:* One for Software Developers (unknown completions)
- *Certifications:* none
- *Other Programs:* One for Software Developers (unknown completions)

More information is needed regarding employer needs and capacity for training programs for low- to middle-skill occupations.

What we Discovered (cont.)

The occupations with the largest gaps are plotted below by **Earnings** (y axis), **Skill Level** (x axis, coded by color), and **Projected Average Annual Workforce Gap** (bubble size), with average hourly earnings and the gap included in the data labels. These nine occupations account for 36.4% of the total gaps anticipated in this cluster. See the appendix for more details on the Top Gap Occupations.

Top Gap Occupations: Tech-Intensive Advanced Manufacturing



Tech-Intensive Advanced Manufacturing Findings

The following two themes are specific to the critical workforce development issues facing the Tech-Intensive Advanced Manufacturing cluster.

The Mohawk Valley's businesses are in need of middle-skill workers (electrical workers) as well as more advanced skills (software developers and managers). Finding opportunities to align apprenticeship programs and retain/attract back workers after college will help address these issues.

Lack of Electrical Workers and Fabricators

Data on the Tech-Intensive Advanced Manufacturing cluster in the Mohawk Valley suggests an annual demand for 60 Electrical, Electronic, and Electromechanical Assemblers and another 43 Miscellaneous Assemblers and Fabricators.

Training programs exist to support the Tech-Intensive Advanced Manufacturing Cluster, but there will be increasing demand over the next 10 years and a shift in technology and innovations.

Targeted attraction and retention for key occupations is needed

Certain occupations within the cluster are appropriate for targeted attraction and retention strategies, including those with a higher income potential such as Software Developers (projected gap of over 375 workers over the next 10 years) and Managers (gap of nearly 200 workers projected).

The Mohawk Valley and Central New York regions will soon be home to the largest semiconductor and advanced manufacturing cluster in the state. Add to this the region's growing cyber security and C4I and quantum computer cluster resulting from the Air Force Research Laboratory's growing technology portfolio and the 50-mile UAS test corridor and Griffiss UAS test site and you get a quickly expanding demand for students with graduate and undergraduate engineering degrees.

To sustain this growing high-technology economy and support the existing advanced manufacturing sectors in the Mohawk Valley and Central New York regions, further investment in SUNY Poly's undergraduate engineering programs and additional graduate engineering degree programs are necessary.

Implementation Plan: Tech-Intensive Advanced Manufacturing Strategies

The Tech-Intensive Advanced Manufacturing cluster implementation strategy recommends a series of projects and initiatives to develop the pipeline of workers.

These recommendations align with the needs and opportunities identified throughout the planning process as well as the stakeholder feedback.

#	Initiative	Description	Partners
9	Expand awareness of Tech-Intensive Advanced Manufacturing careers	Strategies to increase awareness of careers within the Tech-Intensive Advanced Manufacturing cluster to expand the potential applicant pool.	Department of Education, K-12 Educators, BOCES, Parents, Employers, MACNY, National Associations
10	Grow offering of Tech-Intensive Advanced Manufacturing training	Strategies to increase training offerings to meet the growing needs of technical skills for this cluster.	Higher Education Institutions, Department of Education, K-12 Educators, BOCES, Parents, Employers, MACNY

Expand Awareness of Tech-Intensive Advanced Manufacturing Careers

STRATEGY 9

There is great regional and statewide focus on Tech-Intensive Advanced Manufacturing career opportunities. Establishing training programs that are accessible to residents in the Mohawk Valley will ensure the momentum benefits the region.

STRATEGY 9.1

Increase youth awareness and consideration of Tech-Intensive Advanced Manufacturing careers

Tactic: Coordinate with regional and national industry organizations to prepare materials and messaging that build on existing outreach and marketing efforts highlighting career pathways in the designated sectors.

Tactic: Support job fairs that encourage adult participation and conversation around job opportunities — both for their students and potentially for themselves.

Promote via social media and other avenues beyond school guidance counselors. Hold in places outside of the high school such as a makerspace or manufacturing company to make it more interesting and increase awareness of what is in the community.

- Support expansion of events and promotion of SUNY Polytechnic Institute Manufacturing Day initiative.

Tactic: Work with guidance counselors to understand the opportunities, including alternatives to college. Increase awareness of regional career options.

Tactic: Continue to expand October Manufacturing Month events in the region, with different activities, tours, and educational opportunities hosted for students and their parents to attend.

Include tours, speakers who have started straight out of high school and found success, and discussions about career pathways.

- Engage regularly with individuals who showed particular interest (newsletter, mentorship, lunch meetings, etc.).
- Support MACNY in their efforts to work with local employers to understand how to present their company in an engaging and effective way.
- Coordinate with Industrial Development Agencies and other economic development organizations to build capacity and increase opportunities for collaboration.

Tactic: Expand school-based manufacturing programs, such as robotics club, coding clubs, and others that will create interest and skills to serve the Tech-Intensive Advanced Manufacturing cluster.

Grow Offering of Tech-Intensive Advanced Manufacturing Training

STRATEGY 10

Continuing to expand the awareness and availability of training programs to build the skills needed for the Tech-Intensive Advanced Manufacturing Cluster will be critical to strong career potential for residents and workforce for industry.

STRATEGY 10.1

Coordinate across regions in New York State to address critical, statewide workforce development opportunities

Tactic: Establish an I-90 Corridor collaborative to address the workforce development needs resulting from the growth of semiconductor and supply chain companies and align academic programming.

Engage a full spectrum of individuals in this collaborative with a solution-oriented mindset, including:

- Economic development professionals
- Workforce development professionals
- Educational institutions
- Private sector representatives
- Public sector representatives

Tactic: Create an inventory of specialized training programs available throughout the corridor and share resources among regions with the joint goal of growing the industry for New York State.

Tactic: Increase capacity and programming for undergraduate and graduate level engineers throughout.

Tactic: Develop a data-driven talent attraction campaign to bring people from around the country to the Mohawk Valley and the I-90 Corridor to serve the needs of this growing sector.

STRATEGY 10.2

Continue work to establish the Mohawk Valley Advanced Manufacturing Institute on the Mohawk Valley Community College Utica College

Project description: The project adds a fully-functional cleanroom for nanotechnology programs and a lab for Mechatronics, and drastically expands the college's capacity in Semiconductor Manufacturing, HVAC (nanotechnology focus), Robotics, 3D fabrication, and more.

Once completed, the Institute would — by expanding existing programs and adding new programs — have the capacity to provide nanotechnology education and training (with an emphasis on Mechatronics and Semiconductor Manufacturing) for more than 1,000 students in its first five years.

Additionally, the Institute will assist employers by offering training access to the labs, enabling them to secure the necessary skills upgrades for workers at the Nano Utica site.

Grow Offering of Tech-Intensive Advanced Manufacturing Training (Strategy 10 cont.)

STRATEGY 10.3

Expand training program capacity geared toward the Tech-Intensive Advanced Manufacturing sector

Tactic: Support the development and advancement of the existing programs that are addressing the critical skill needs of this sector, including:

- SUNY Polytechnic Institute
- Innovare Center for Advancement
- The Griffiss Institute
- MACNY

Tactic: Build management skills and capacity associated with the Tech-Intensive Advanced Manufacturing cluster, including upskilling current workers as well as retaining and attracting residents with the right skills.

- Support efforts of MACNY to deliver training to their members, including around issues of leadership.
- Look to create collaborative programming between institutions to incorporate management and leadership skill development.

Tactic: Continue to work with workforce development boards to invest in long-range efforts to build key skills in science and math to move students towards careers in highly technical fields and occupations. Invest in existing higher education offerings in the region, such as SUNY Poly, to prepare students with advanced degrees.

Tactic: Focus on upskilling workers, including opportunities for before and after work hours for adult learners. Work with local workforce boards to fund customized training programs offering recognized credentials.

Tactic: Continue to strengthen the workforce development pipeline to meet the growing need of the chip fabrication sector. Including early learning programs, pre-apprenticeship programs, dual credit programs, earn-and-learn programs, and continued development of custom programs.

- Ex) Mohawk Valley Community College School of STEM Career and Transfer programs and Mechatronics Labs

Tactic: Assess the capacity and expansion potential of the SUNY Poly Northeast Advanced Technology Education Center (NEATEC) Advanced Manufacturing Technician Training. Strengthen pipeline to employment for graduates by coordinating conversations with local employers for post-graduation opportunities.

Tactic: Expand training programs for critical trades and occupations, including Diesel Tech programs, CDL training programs, and electrician apprenticeships with New York State Registered Apprenticeship Programs. Consider additional funding to address the lack of mentors.

STRATEGY 10.4

Diversify the Tech-Intensive Advanced Manufacturing Cluster

Tactic: Fund programs to increase opportunities for underrepresented populations, including females and minorities.

- Ex) MACNY Diversifying the Advanced Manufacturing Workforce program to increase female participation in the industry, including pre-apprenticeship programs and provide wrap around services.
- Ex) MV Tech Corps program to provide tuition for students to train for critical occupations
- Ex) Wolfsped Scholarship Program

Agribusiness Appendix

Top Gap Occupations

	Farmers, Ranchers, and Other Agricultural Managers 11-9013	Farmworkers and Laborers, Crop, Nursery, and Greenhouse 45-2092	Packaging and Filling Machine Operators and Tenders 51-9111	Laborers and Freight, Stock, and Material Movers, Hand 53-7062	Farmworkers, Farm, Ranch, and Aquacultural Animals 45-2093	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products 41-4012	Food Batchmakers 51-3092	Heavy and Tractor-Trailer Truck Drivers 53-3032	Bakers 51-3011
Cluster Jobs	688	388	337	218	155	247	171	173	136
Share of Staffing Pattern	10.2%	5.8%	5.0%	3.2%	2.3%	3.7%	2.5%	2.6%	2.0%
2021 Net Commuters	-33	-52	-173	-181	-18	-210	-37	-248	-41
Change in Resident Workers (2016–2021)	32%	0%	-18%	-4%	4%	-9%	-22%	22%	-14%
2021 Turnover Rate	19%	123%	59%	92%	82%	38%	53%	61%	51%
Automation Index (1)	94	113	117	117	107	92	111	110	122
Earnings									
Avg. Hourly Earnings	\$22.10	\$14.70	\$17.37	\$17.70	\$14.03	\$32.64	\$18.16	\$24.10	\$15.38
Wage Difference from Self Sufficiency (2)									
1 adult	\$10.72	\$3.33	\$5.99	\$6.32	\$2.66	\$21.27	\$6.78	\$12.72	\$4.01
1 adult + 1 school-aged child	\$3.71	(\$3.69)	(\$1.02)	(\$0.69)	(\$4.36)	\$14.25	(\$0.23)	\$5.71	(\$3.01)
Workforce Gap Analysis (2022–2032)									
Openings (3)	843	811	397	314	309	256	233	216	192
Labor Force Change (4)	(48)	(29)	(22)	(14)	(11)	(16)	(11)	(11)	(9)
Occupational Gap (5)	(891)	(840)	(419)	(329)	(320)	(272)	(244)	(227)	(201)
Average Annual Gap	(89)	(84)	(42)	(33)	(32)	(27)	(24)	(23)	(20)
Share of Total Gap	9.6%	9.0%	4.5%	3.5%	3.4%	2.9%	2.6%	2.4%	2.2%
Job Requirements									
Typical entry-level education	HS diploma or equiv.	No formal credential	HS diploma or equiv.	No formal credential	No formal credential	HS diploma or equiv.	HS diploma or equiv.	Nondegree award	No formal credential
Typical Work Experience	5 years +	None	None	None	None	None	None	None	None
Typical on-the-job training	None	Short	Moderate	Short	Short	Moderate	Moderate	Short	Moderate
Training Pipeline									
Higher Education Training Programs	12	1	0	0	2	26	0	0	0
Avg. Annual Completions (2010–2020) (6)	171	4	0	0	21	785	0	0	0
Apprenticeship Programs (7)	.	.	.	.	.	.	.	.	.
Other Training Programs (8)	.	.	.	.	.	.	.	2	.
Certification Offered	.	.	.	.	.	.	.	2	.
Demographics									
Age < 25	6%	28%	9%	24%	32%	4%	0%	5%	12%
Age 55 +	45%	18%	24%	17%	20%	37%	20%	34%	21%
Females	20%	30%	52%	23%	32%	22%	46%	5%	52%
Diversity	10%	24%	28%	23%	23%	6%	16%	17%	33%

Notes

Unless otherwise noted, all data is for 2021 and was sourced from Lightcast (formerly EMSI / Burning Glass).

- 1) **Automation Index:** The occupation's risk of being affected by automation. The scale is base is 100, with indices greater than 100 indicating higher-than-average risk of automation.
- 2) **Wage Difference from Self-Sufficiency:** Measures the income families of various sizes need to pay for basic expenses. For the Mohawk Valley, the Self-Sufficiency Standard is \$11.38/hour for 1 adult and \$18.39/hour for 1 adult + 1 school-aged child. Source: The Self-Sufficiency Standard for New York 2021, Center for Women's Welfare, University of Washington School of Social Work, March 2021.
- 3) **Openings** = Projected new jobs + replacement jobs (jobs that will need to be filled by new hires due to existing workers leaving the occupation because of retirements or a worker otherwise exiting the occupation). Camoin estimated the cluster's Openings by multiplying the total openings for the occupation across the entire economy by the average of the cluster's 2022 and 2032 shares of total employment for that occupation. Source: Camoin + Lightcast.
- 4) **Labor Force Change:** Camoin modeled the projected Labor Force Change using population projections by age group for the Region, New York State's historical labor force participation rates, and national trends in participation by age group to capture changes due to the aging of the workforce. Labor Force Change = (Total 2022–2032 change in labor force) x (average of occupation's 2022 and 2032 shares of total employment) x (average of cluster's 2022 and 2032 shares of total employment for that occupation). Sources: Camoin, Bureau of Labor Statistics, and Lightcast.
- 5) **Occupational Gap** = Labor Force Change – Openings
- 6) **Average Annual Completions:** Assumes the Northeast's graduate retention rate of 71%. Source: National Center for Education Statistics.
- 7) **Apprenticeship Programs:** Source: US Department of Labor's National Registered Apprenticeship System
- 8) **Other Training Programs:** Source: New York State Eligible Training Providers List

Finance and Insurance Appendix

Top Gap Occupations

	Customer Service Representatives 43-4051	Insurance Sales Agents 41-3021	Tellers 43-3071	Claims Adjusters, Examiners, and Investigators 13-1031	Securities, Commodities, and Financial Services Sales Agents 41-3031	General and Operations Managers 11-1021
Cluster Jobs	717	671	495	417	302	330
Share of Staffing Pattern	8.1%	7.6%	5.6%	4.7%	3.4%	3.7%
2021 Net Commuters	-402	-153	-58	-48	-99	-464
Change in Resident Workers (2016–2021)	-6%	3%	-30%	-36%	65%	36%
2021 Turnover Rate	60%	22%	20%	17%	16%	41%
Automation Index (1)	96	96	102	89	93	82
Earnings						
Avg. Hourly Earnings	\$18.48	\$37.30	\$16.37	\$32.60	\$46.16	\$51.16
Wage Difference from Self Sufficiency (2)						
1 adult	\$7.10	\$25.93	\$4.99	\$21.22	\$34.78	\$39.78
1 adult + 1 school-aged child	\$0.09	\$18.91	(\$2.02)	\$14.21	\$27.77	\$32.77
Workforce Gap Analysis (2022–2032)						
Openings (3)	885	715	475	332	318	315
Labor Force Change (4)	(44)	(45)	(29)	(27)	(21)	(23)
Occupational Gap (5)	(929)	(760)	(504)	(359)	(339)	(338)
Average Annual Gap	(93)	(76)	(50)	(36)	(34)	(34)
Share of Total Gap	9.8%	8.0%	5.3%	3.8%	3.6%	3.6%
Job Requirements						
Typical entry-level education	HS diploma or equiv.	HS diploma or equiv.	HS diploma or equiv.	HS diploma or equiv.	Bachelor's degree	Bachelor's degree
Typical Work Experience	None	None	None	None	None	5 years +
Typical on-the-job training	Short	Moderate	Short	Long	Moderate	None
Training Pipeline						
Higher Education Training Programs	26	1	4	3	4	46
Avg. Annual Completions (2010–2020) (6)	776	2	10	7	5	894
Apprenticeship Programs (7)	.	.	.	.	.	.
Other Training Programs (8)	.	.	.	.	.	.
Certification Offered	.	.	.	.	.	.
Demographics						
Age < 25	15%	3%	18%	0%	4%	2%
Age 55 +	22%	36%	21%	28%	23%	28%
Females	70%	54%	89%	67%	42%	29%
Diversity	19%	11%	13%	12%	9%	9%

Top Gap Occupations

	Insurance Underwriters 13-2053	First-Line Supervisors of Office and Administrative Support Workers 43-1011	Insurance Claims and Policy Processing Clerks 43-9041	Bookkeeping, Accounting, and Auditing Clerks 43-3031	Financial Managers 11-3031
Cluster Jobs	382	310	305	258	256
Share of Staffing Pattern	4.3%	3.5%	3.4%	2.9%	2.9%
2021 Net Commuters	23	-162	1	26	-95
Change in Resident Workers (2016–2021)	-9%	-11%	-6%	-14%	21%
2021 Turnover Rate	15%	45%	22%	56%	22%
Automation Index (1)	95	92	100	104	86
Earnings					
Avg. Hourly Earnings	\$38.52	\$29.67	\$21.54	\$20.98	\$71.83
Wage Difference from Self Sufficiency (2)					
1 adult	\$27.15	\$18.29	\$10.17	\$9.60	\$60.45
1 adult + 1 school-aged child	\$20.13	\$11.28	\$3.15	\$2.59	\$53.44
Workforce Gap Analysis (2022–2032)					
Openings (3)	310	305	290	279	266
Labor Force Change (4)	(25)	(19)	(19)	(16)	(19)
Occupational Gap (5)	(336)	(324)	(309)	(296)	(285)
Average Annual Gap	(34)	(32)	(31)	(30)	(28)
Share of Total Gap	3.5%	3.4%	3.2%	3.1%	3.0%
Job Requirements					
Typical entry-level education	Bachelor's degree	HS diploma or equiv.	HS diploma or equiv.	Some college, no degree	Bachelor's degree
Typical Work Experience	None	< 5 years	None	None	5 years +
Typical on-the-job training	Moderate	None	Moderate	Moderate	None
Training Pipeline					
Higher Education Training Programs	4	43	6	13	34
Avg. Annual Completions (2010–2020) (6)	7	933	22	125	853
Apprenticeship Programs (7)	.	.	.	.	.
Other Training Programs (8)	.	.	.	.	.
Certification Offered	.	.	.	.	.
Demographics					
Age < 25	0%	3%	3%	4%	0%
Age 55 +	28%	30%	27%	42%	28%
Females	74%	67%	87%	88%	59%
Diversity	7%	16%	12%	12%	13%

Notes

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- 1) **Automation Index:** The occupation's risk of being affected by automation. The scale is base is 100, with indices greater than 100 indicating higher-than-average risk of automation.
- 2) **Wage Difference from Self-Sufficiency:** Measures the income families of various sizes need to pay for basic expenses. For the Mohawk Valley, the Self-Sufficiency Standard is \$11.38/hour for 1 adult and \$18.39/hour for 1 adult + 1 school-aged child. Source: The Self-Sufficiency Standard for New York 2021, Center for Women's Welfare, University of Washington School of Social Work, March 2021.
- 3) **Openings** = Projected new jobs + replacement jobs (jobs that will need to be filled by new hires due to existing workers leaving the occupation because of retirements or a worker otherwise exiting the occupation). Camoin estimated the cluster's Openings by multiplying the total openings for the occupation across the entire economy by the average of the cluster's 2022 and 2032 shares of total employment for that occupation. Source: Camoin + Lightcast.
- 4) **Labor Force Change:** Camoin modeled the projected Labor Force Change using population projections by age group for the Region, New York State's historical labor force participation rates, and national trends in participation by age group to capture changes due to the aging of the workforce. Labor Force Change = (Total 2022–2032 change in labor force) x (average of occupation's 2022 and 2032 shares of total employment) x (average of cluster's 2022 and 2032 shares of total employment for that occupation). Sources: Camoin, Bureau of Labor Statistics, and Lightcast.
- 5) **Occupational Gap** = Labor Force Change – Openings
- 6) **Average Annual Completions:** Assumes the Northeast's graduate retention rate of 71%. Source: National Center for Education Statistics.
- 7) **Apprenticeship Programs:** Source: US Department of Labor's National Registered Apprenticeship System
- 8) **Other Training Programs:** Source: New York State Eligible Training Providers List

Tech-Intensive Advanced Manufacturing Appendix

Top Gap Occupations

	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers 51-2028	Miscellaneous Assemblers and Fabricators 51-2098	Software Developers 15-1252	General and Operations Managers 11-1021	Inspectors, Testers, Sorters, Samplers, and Weighers 51-9061	Semiconductor Processing Technicians 51-9141	Telecommunications Equipment Installers and Repairers, Except Line Installers 49-2022	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel 41-3091	Customer Service Representatives 43-4051
Cluster Jobs	468	345	296	191	147	102	137	105	107
Share of Staffing Pattern	8.3%	6.1%	5.2%	3.4%	2.6%	1.8%	2.4%	1.9%	1.9%
2021 Net Commuters	-137	-57	-151	-464	-108	-10	17	-208	-402
Change in Resident Workers (2016–2021)	77%	-13%	3%	36%	2%	156%	-13%	10%	-6%
2021 Turnover Rate	33%	68%	28%	41%	64%	29%	41%	63%	60%
Automation Index (1)	111	113	80	82	106	108	105	97	96
Earnings									
Avg. Hourly Earnings	\$16.05	\$16.60	\$49.86	\$51.16	\$21.06	\$17.76	\$30.03	\$33.03	\$18.48
Wage Difference from Self Sufficiency (2)									
1 adult	\$4.67	\$5.23	\$38.49	\$39.78	\$9.68	\$6.39	\$18.65	\$21.65	\$7.10
1 adult + 1 school aged child	(\$2.34)	(\$1.79)	\$31.47	\$32.77	\$2.67	(\$0.63)	\$11.64	\$14.64	\$0.09
Workforce Gap Analysis (2022–2032)									
Openings (3)	569	405	355	180	176	149	142	134	129
Labor Force Change (4)	(31)	(23)	(23)	(13)	(9)	(7)	(8)	(7)	(6)
Occupational Gap (5)	(600)	(428)	(378)	(193)	(186)	(156)	(150)	(141)	(136)
Average Annual Gap	(60)	(43)	(38)	(19)	(19)	(16)	(15)	(14)	(14)
Share of Total Gap	9.2%	6.6%	5.8%	3.0%	2.9%	2.4%	2.3%	2.2%	2.1%
Job Requirements									
Typical entry-level education	HS diploma or equiv.	HS diploma or equiv.	Bachelor's degree	Bachelor's degree	HS diploma or equiv.	HS diploma or equiv.	Nondegree award	HS diploma or equiv.	HS diploma or equiv.
Typical Work Experience	None	None	None	5 years +	None	None	None	None	None
Typical on-the-job training	Moderate	Moderate	None	None	Moderate	Moderate	Moderate	Moderate	Short
Training Pipeline									
Higher Education Training Programs	3	0	26	46	4	1	6	11	26
Avg. Annual Completions (2010–2020) (6)	28	0	149	894	31	0	19	298	776
Apprenticeship Programs (7)	.	.	1	.	.	.	.	.	.
Other Training Programs (8)	.	.	1	.	.	.	.	.	.
Certification Offered	.	.	.	.	.	.	.	.	.
Demographics									
Age < 25	8%	10%	5%	2%	7%	0%	0%	7%	15%
Age 55 +	34%	26%	17%	28%	33%	22%	22%	29%	22%
Females	52%	34%	22%	29%	38%	40%	13%	33%	70%
Diversity	29%	23%	22%	9%	18%	24%	15%	9%	19%

Notes

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Prepared by:

